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To me, as a member of a university which numbers Thomas Linacre amongst her honoured sons and benefactors, the invitation to deliver the lecture which he founded in the sister seat of learning is a great honour and privilege, for which I offer my sincere thanks to the Master and Fellows of St. John's College.

Those of us who entered upon the study of science 50 years ago have lived through stirring times. We have witnessed not only a rapid growth of natural knowledge, but also profound changes of outlook. We are like crater-dwellers who have climbed, step by step, the enclosing heights, and look over the edge upon unexplored regions beyond. Conceptions which seemed to be founded upon solid rock have been shown to be unstable, and a new and not merely a more ample science has come into being. The rigid and immutable atom has been revealed as a microcosm, a storehouse of energies which we can neither utilise nor control. Even Newton's laws no longer suffice; space is awry and all is relative. A new and higher chemistry deals with such phenomena as radio-activity and atomic degradation; with new entities such as emanations and isotopes. The barriers between chemistry and physics are broken down, and by the study of the properties of colloids we may hope, in the end, to solve the riddle of life. The higher biology, which had its beginnings with Darwin, Wallace, and Huxley, with Mendel and Francis Galton, is becoming permeated by chemistry and physics, and has become an experimental science as well as a science of observation.

We, too, who pursue the science of medicine are looking over the edge, have entered upon new and unfamiliar ground, and have obtained glimpses of a higher medicine. By far the most important factor in this change of outlook has been the growth of bacteriology and protozoology. These have revealed the actual agents which produce disease, the ways in which they are conveyed to and enter the organism, and are bringing to light the phenomena of immunity. Moreover, they supply us with new methods by which to combat disease, and have rendered possible the triumphs of preventive medicine and aseptic surgery. Only those who lived in the days before bacteriology can realise the revolution in medical thought which it has brought about, and even they fail to realise it fully, so gradually have they adapted themselves to each fresh advance of knowledge.

A second potent factor has been the progress of biochemistry, the science which reveals the composition of the living tissues, the nature of the metabolic processess of which they are the seats, and the disturbances of those processes which are wrought by disease. We have been taught to think of pathology in terms of the cell, but we are learning to think of it in terms of the molecule. As was foreshadowed by Herbert Spencer many years ago, and as has been urged in recent years by various authors, it is not in so highly organised a structure as the cell that we should seek for the beginnings of life, but rather in the molecule so complex and unstable that, in a suitable colloidal environment and in the presence of catalytic agents, it breaks down and is reconstructed. It is between the active and inactive molecule that the unbridged gap exists rather than between the unicellular organism and the elephant or tree, which are but nations of specialised cells. Only the molecules of proteins possess the required complexity and instability, and all evidence points to the proteins as the vehicles of life.

It is hardly needful nowadays to argue that animals and plants of different genera and species differ in their chemistry as they do in their structure. This idea, although it is not much older than the present century, is already widely accepted by biologists, and permeates the most recent literature of their science. Their acceptance of it is mainly based upon the results of the so-called biological tests, the precipitin reaction and the phenomena of protein shock. But we have no need to rely upon such ultra-chemical evidence alone, for strictly chemical methods provide ample proofs of its truth. Some such evidence was brought together by the late Prof. Huppert, of Prague, in a masterly Rectorial address delivered in the year 1896. That address, which had for its title "Die Erhaltung der Arteigenschaften," was published only in pamphlet form, and is not easily accessible, which is unfortunate, seeing that it contains not only one of the earliest, but also one of the most suggestive and convincing expositions of the theme.

It is a well-known fact that the hæmoglobins of animals differ in crystalline forms, and Rollet showed that when the laked blood of a squirrel is mixed with that of a mouse the squirrel and mouse hæmoglobins crystallise out in their characteristic forms. Reichert and Brown also detected minor differences of crystalline behaviour in the hæmoglobins of closely allied species, and differences of iron content have also been shown to exist. Presumably the differences lie in the complex globin, and not in the comparatively simple hæmatin. That the fats of different animals differ in composition is also well known, but a foreign fat can be stored and utilised. The tissues of higher animals contain the same elements, combined in various proportions, but amongst the invertebrata other elements are met with, such as copper in the hæmocyanin of crustaceans and molluscs. Nor is this true of invertebrata alone, as witness the presence of copper in the red pigment of the feathers of the plantain-eaters, which has such strange affinities with hæmoglobin and hæmatin.

Not only are the materials of which the tissues are composed generic or specific, but also the products of the metabolic processes. Evidence of this is afforded by the specific bile-salts of certain mammals, and by the wide differences in the proportions of the various purin substances in the excreta which have been described by Andrew Hunter, by the presence of cynurenic acid in the urine of animals of the canine tribe, by the sepia of the cuttlefish, and the mephitic odour of the skunk. The vegetable kingdom also affords very many examples, but those which have been quoted must suffice.

The teasing out of the protein molecules, by Emil Fischer and those who have carried on his work, has revealed possibilities of almost infinite variety in the groupings and proportional representations of the 20 odd amino-acids and diamino-acids of which the protein molecules are built up. The possible arrangements in which each such fraction is represented once and only once exceeds a million millions, and if we allow for the fact that some proteins are poor and some are rich in particular fractions, and that in others some amino-acids are not represented, it is obvious that we are confronted with figures such as those with which astronomers deal. We may well believe that there are special proteins for every species, and indeed for every individual in a species. We cannot doubt that in such compounds the specific differences mainly lie, and even if certain highly specialised proteins, such as those of the crystalline lens, are common to many species, that does not invalidate the general law. In this connexion the precipitin test is of very special value, for it shows that the more nearly

genera or species are allied, the more closely do their proteins approximate.

To a large extent bodily form and chemical structure go hand in hand, and the view that the form of an animal or plant is determined by its chemical constitution is now held by not a few biologists. But how this comes about is as yet an unsolved problem. The relation of crystalline form to chemical composition offers an obvious analogy, but one which must not be stretched too far. It is a far cry from the cube or octahedron to the webbed foot of the duck or to the highly specialised hand of man. Leduc approached the problem by the study of the forms produced by osmosis, which often bear such weird resemblance to animal and vegetable structures, and others have sought for clues in the workings of the endocrine glands, some of which have a remarkable influence on bodily form. But it seems to me that the strongest argument that can be adduced in support of the hypothesis that bodily form depends upon chemical structure is based on the fact that the germinal cells of different animals, which resemble each other so closely in structure, and even the chromosomes of their nuclei, obviously include factors which determine both the forms and metabolic peculiarities of the organisms which originate from them.

If it be the fact that genera and species are chemically diverse, it must also be the case that the diversity extends, in some degree, to the individual members of a species. Although strictly chemical evidence of such individual differences are not yet forthcoming, they nevertheless reveal themselves in various ways. The need for the selection of blood from donors of a particular group, if transfusion is to be carried out with success, is a case in point; and further evidence is afforded by personal idiosyncrasies to special foods and drugs, by the colours of skin, hair, and eyes, and by individual liabilities to, or immunity from, certain infective maladies. We may easily suppose that when divergence exceeds a certain limit, sterility may result from incompatability of the germinal proteins, and that in this way specific characters become established, and the characteristics of the species are preserved.

It must needs be difficult to distinguish small deviations from the normal metabolic scheme of a species from the innumerable disturbances which disease brings in its train, but there are met with in rare cases gross variations which are obviously congenital. These inborn errors of metabolism, such as alcaptonuria, cystinuria, and hæmatoporphyria congenita, are in a high degree hereditary, and behave, for the most part, as Mendelian recessive characters. We can hardly doubt that those which we know are only samples of a much larger group, and attract attention because they advertise themselves in conspicuous ways. The more closely these errors are studied, the more probable does it appear that in each instance the fault lies in the failure of a special enzyme, which is responsible for some particular step in normal metabolism. It would appear that the individual protein fractions, or groups of closely akin fractions, such as tyrosin and phenylalanin, are dealt with in successive stages by appropriate enzymes. If one step is missed the intermediate product in being is excreted as such, or in a slightly altered form. If, however, the default be at an early stage of catabolism, and a process such as desamination, which is common to all the fractions, be involved, a wider effect is produced. Thus in cystinuria various amino-acids may be excreted in addition to cystin, and all without the loss of their amino groupings. In alcaptonuria, on the other hand, only tyrosin and phenylalanin are implicated, and the other protein fractions are dealt with in the ordinary way.

If it be granted that the individual members of a species may vary from the normal of the species in chemical structure and chemical behaviour, it is obvious that such variations or mutations are capable of being perpetuated by natural selection; and not a few biologists of the present day assign to chemical structure and functions a most important share in the evolution of species. This aspect of evolutionary thought was emphasised by Prof. Goodrich in his address to the Zoological Section of the British Association in 1922.

We may picture each cell of a living organism as a seat of intense chemical activities. In it are carried on processes of oxidation and reduction, of destruction and reconstruction, side by side and without any mutual interference. The study of colloidal chemistry is helping to throw light upon these marvellous intracellular activities, and upon the enzyme actions by which they are brought about. If left uncontrolled, these processes would run riot, and it is obvious that all the processes in the living organism are under efficient control. In no other way can be explained the average height and weight of human beings, the uniformity of the body temperature, the standard blood pressure, and the more or less uniform output of the various end-products of metabolism. It is equally obvious that the control is exquisitely adaptable to changes of the external temperature, to the needs of the growing organism, and to the conditions present in disease. Such a control cannot be one-sided, and involves a balance of opposing factors.

In the more recent years we have learned much concerning the mechanism by which this is effected. The agents of control are the hormones produced by the endocrine glands, chemical compounds of no great complexity. Two such hormones have been isolated. The nature of adrenalin and of thyroxin has been investigated by strictly chemical methods, their composition is established, and the synthesis of adrenalin has been effected. The endocrine glands are themselves under the control of the sympathetic nervous system, and the control is to some extent automatic. The supply of a hormone is regulated by the demand, as is the gas-supply of an incubator. There is much evidence which points to a balance of the endocrine glands, some of which coöperate, whereas others secrete antagonistic hormones. We may picture them as a system of weights and pulleys, in stable equilibrium, in which removal of any one weight causes the whole system to hang awry.

The periods of activity of some of the endocrine glands covers only a part of the life-time of the individual. The thymus soon goes out of action, and there is some evidence that the pineal ceases to function at puberty. At puberty also the gonoids become active and cease to function at the menopause. The phenomena of puberty may be regarded as signs of the readjustment of the endocrine balance, as also may those of the menopause. The enlargement of the thyroid which is so common in girls at puberty, and the obesity which so often follows the menopause, are minor indications of these readjustments.

Clinical observation reveals conspicuous differences between the organism of the child and that of the adult. Some maladies occur only in children, and others which attack individuals of all ages present widely different clinical pictures in adults and children respectively. The lesions produced by the tubercle bacillus and the pneumococcus differ in their seats and characters in children and adults, and—to select a specially striking example—rheumatic fever in a child is very unlike the same disease in an older patient. Such differences supply the justification for the erection of pædiatrics into a special branch of medical study. Some of these differences depend upon the immaturity of the tissues, and it would not be justifiable, in the present state of our knowledge, to attribute them to the changes in the endocrine balance, but they may well have a chemical basis.

The orderly sequence of metabolic changes which is at work in the normal organism is profoundly disturbed by the incursion of the agents of disease. Elaborate devices are called into play to destroy the invaders and to render inert their toxic products. Very often the invaders fail to gain a foothold and our natural defences avert from us many more such

attacks than we wot of. If a foothold be obtained the protective mechanisms may succeed in localising the mischief, and a local inflammation results, but from such a focus virulent poisons may, as in tetanus, be carried to remote parts of the body. Even if the local defences be broken down, and general infection results, the means of defence are not exhausted, the tissues often win the day in the end, the invaders are destroyed, and the patient recovers. The mobilisation of the phagocytes plays an important part, but some of the defensive mechanisms are frankly chemical, such as the neutralisation of acids by ammonia, and the combination of aromatic poisons with glycocol to form the hippuric acids, or with sulphates to form aromatic sulphates, whereby they are rendered innocuous until they can be got rid of by excretion. Others are still beyond the reach of strictly chemical investigation, such as the formation of antitoxins and bactericidal substances, and the other substances which the modern study of immunity has revealed, but which are still seen "through a glass darkly." We cannot doubt that these protections are products of natural selection, for it is obvious that those organisms which are best armed against their natural enemies are the fittest to survive.

The discovery of these wonderful protective mechanisms has opened the eyes of those of us who pursue the science and art of medicine to the shortcomings of our own therapeutic methods, and the immense superiority of nature's drugs. We have come to realise that instead of commanding the forces engaged in the fight with disease, with the body of our patient as the battlefield, we are but his allies in the combat which he is himself waging against the enemies which assail and threaten to overwhelm him. In response to this lesson we try to make use of nature's own remedies, with results which are sometimes brilliant, and often encouraging, in spite of the defects of our technique. When the various protective agents shall have been isolated, so that we can give them in pure forms, and freed from extraneous substances which hamper their use, we shall be far better equipped than we are at present for the fight with disease.

The toxic substances are probably of several kinds. Some may be compared to the poisons which are formed by certain plants, such as atropine and strychnine. Others may, as Abderhalden suggests, be intermediate products of the breakdown of bacterial proteins, and others, again, the actual proteins of the slain invaders, which produce the morbid effects common to foreign proteins in general. It is only in recent years that we have come to realise how important is the part played by protein poisoning, and protein shock, in shaping the clinical pictures of various maladies, and not only of those which result from bacterial or protozoal infection. Serum sickness, which so often follows an injection of a serum after an interval of some days, is curiously reminiscent of syndromes which are produced by bacterial infections. Pain and swelling of joints, fever, and an erythematous or urticarial rash are its outstanding symptoms, and such association of lesions of the joints and skin are often observed in disease. The transitory arthritis of rheumatic fever and the erythemata which sometimes accompany it may possibly result from poisoning by bacterial proteins, and such influences may have a share in shaping the clinical pictures of the exanthemata.

Asthma offers the best known and most obvious example of a malady in which hypersensitiveness to foreign proteins plays a conspicuous part. The asthma syndrome may be caused by foreign proteins which gain access to the organism by way of the naso-pharynx, conjunctiva, or the mucous membrane of the alimentary tract. In some cases the provoking agent is a pollen, as in the familiar hay asthma, in others the hair or emanations of an animal, such as a cat, horse, or guinea-pig, and in yet others a food protein, such as casein or egg-albumin. The attacks may cease when the patient is protected from the exciting cause, or when he has been desensitised by the administration of the peccant substance in small graduated doses.

We are probably justified in referring to the same cause certain periodic diseases in which the recurrent symptoms are such as foreign proteins are known to produce. Henoch's purpura is one of these, and erythemata sometimes recur in this way. But one of the most interesting and remarkable of such manifestations is the periodic swelling of the knees, and sometimes of other joints, which is known as intermittent hydrarthrosis. The attacks recur with almost mathematical regularity, so that the patient can make his arrangements in anticipation of their return. The interval varies in different cases, but is usually from six to eight days, and the duration of the attack is about three days. Joints which have been seriously damaged by any form of arthritis may be seats of the trouble, but more often the knees appear perfectly normal between the attacks, at least in the earlier stages of the complaint. That the articular structures are not primarily at fault is shown by the facts that the attacks almost always cease during a pregnancy, but recur after delivery, and that active local treatment of an affected joint may be followed by transfer of the attacks to the corresponding joint of the opposite limb. In some cases giant œdema of the lip or eyelid may recur with each articular attack. The easiest explanation of the regularity of recurrence is that each attack produces a temporary desensitisation of the patient.

The cyclic vomiting of children affords yet another example, and just as patients may grow out of their sensitiveness to a special protein food, so such cyclic vomiting usually ceases when the child grows older. Such maladies serve to illustrate a general law that whereas the intruding agents are the actual cause of disease, the reaction of the patient's tissues shapes the clinical picture.

Another potent factor in not a few diseases is disturbance of the balance of the endocrine glands. The study of the functions of these glands, which has been carried on by many observers since Addison published his classical monograph upon the disease, or rather syndrome, which bears his name, has opened up a most fascinating field of physiology and medicine. Nature's experiments and man's have thrown much light upon their several functions. They have revealed the influence of the thyroid upon metabolism as a whole, that of the pituitary upon growth and fat storage, that of the chromaffin tissues and posterior lobe of the pituitary upon blood pressure, and that of several of these glands upon carbohydrate metabolism. These are only a few examples of the manifold endocrine activities which may be thrown out of gear when these organs are damaged by disease.

Many riddles are still unsolved. We do not know what purpose is served by the apposition, in what is from the anatomical standpoint a single organ, of glands of widely different functions. The pituitary consists of two, if not three, such structures. Much of the chromaffin tissue is wrapped round by the adrenal cortex, and in higher animals what may be called the gland of Langerhans is scattered in fragments through the substance of that great digestive gland, the pancreas.

As I have already mentioned, some of the endocrine glands are obviously antagonistic in their functions, so that when one is thrown out of action its antagonist tends to run riot, whereas others appear to act in alliance. The familiar signs of myxœdema, cretinism, and cachexia strumipriva cannot obviously be attributed to the thyroid gland, the functions of which are in abeyance, but to the uncontrolled working of other endocrine organs which the normal thyroid holds in check. Fröhlich's syndrome, or dystrophia adiposo-genitalis, with its combination of obesity and regressive infantilism, results from destruction of the pituitary, just as myxœdema does from destruction or atrophy of the thyroid, but the pituitary is a far more complex organ, and cases of hypopituitarism do not conform to type nearly so close as do those of

hypothyroidism. Some of the patients with this condition are not obese and in others infantilism is not conspicuous. Both myxœdema and Fröhlich's syndrome are but extreme examples, and between these conditions and normality all degrees of hypothyroidism and hypopituitarism are met with.

The evidence that some of the endocrine syndromes are due to over-activity of the glands involved is far less conclusive, and some investigators whose opinions are entitled to the greatest respect lean to the view that such maladies as acromegaly and exophthalmic goitre are due rather to a perverted than to an exalted functional activity, that not merely an excess of the pituitary and thyroid hormones are produced, but a wrong kind of hormone. The hypothesis that acromegaly is the result of hyperpituitarism involves the assumption that an adenoma of a gland may increase the output of its secretory products.

Nevertheless, it appears to me that the evidence for the hypothesis of hyperactivity outweighs that which can be advanced in support of the alternative hypothesis of perverted function. And in this connexion a case recorded by Notthaft is of special interest. A man who wished to reduce his weight, took, on his own initiative and without medical advice, a thousand five-grain tabloids of thyroid extract in the space of five weeks. He developed the signs of exophthalmic goitre of extreme degree—namely, tachycardia, exophthalmos with lagging of the upper eyelid, tremor, and, be it noted, enlargement of the thyroid gland. His urine contained sugar, and the average volume passed daily amounted to 3000 c.cm. After the drug was stopped the signs disappeared, the glycosuria after ten days, the tremor after four weeks, but the ocular signs and the swelling of the thyroid persisted for about six months. We can hardly escape the conclusion that the enlargement of the thyroid in this case was a part of a vicious circle. The thyroid is controlled by the sympathetic nervous system, whereas thyroxin stimulates the sympathetic, and so the conditions exist which are needed to ensure auto-aggravation of the disease.

In order to show the kind of evidence upon which the hypothesis of an endocrine balance rests, I propose to select one particular example of endocrine antagonism, and that not one of the most familiar. It may be called the thyroido-pancreatic, or, more accurately, the thyroido-Langerhans syndrome. There is good reason to believe that these two glands are antagonists, that over-activity of the thyroid inhibits the islands and vice versa. Thus the administration of thyroid extract induces glycosuria, most readily in normal individuals to whom any dose is practically an over-dose. Even patients with myxœdema may excrete sugar in the course of treatment, if the dose given be beyond their requirement, although, as is well known, their glucose tolerance far exceeds the normal limit. On the other hand, glucose tolerance is often lowered in cases of Graves's disease; some patients pass sugar intermittently, and some acquire a veritable diabetes. Some, again, as Falta showed, pass fatty stools and are found to have morbid changes in the pancreas.

Far less familiar is the reverse of the picture—namely, the tendency of sufferers from disease of the pancreas to exhibit signs of over-activity of the thyroid. The most conspicuous examples are afforded by cases in which diabetes and exophthalmic goitre co-exist, and in which it can be shown that the excretion of glucose preceded by a considerable period the appearance of the signs of hyperthyroidism. Some diabetics exhibit an incomplete thyroidal syndrome, usually limited to the ocular signs. I can myself recall several such cases in which the prominence of the eyeballs attracted attention and von Graefe's sign was pronounced, but in which, at least in the early stages, the pulse-frequency was normal or even below the normal. In some of these cases tachycardia developed as time went on.

Some years ago Cohn and Peiser described a series of cases of acute and chronic pancreatitis in which similar symptoms were observed. Of the cases, five in number, three were of acute hæmorrhagic, one of suppurative, and one of chronic interstitial pancreatitis. Von Graefe's sign was elicited in four, Mœbius's and Stellwag's signs were present in all, and also tremor and dermatography. The authors wisely decline to base any sweeping generalisation upon so small a number of cases, but since their paper appeared I have been able to confirm their observations in several cases of acute pancreatitis. In a condition of such gravity these signs are apt to escape notice, unless specially looked for, seeing that they are never pronounced. On the other hand, the high glucose tolerance of myxœdematous patients points to over-activity of the islands when the control of the thyroid is removed.

Glycosuria is a symptom of various endocrine diseases, and, when met with, it suggests a similar antagonistic action of hormones. In acromegaly glycosuria is not uncommon, whereas in hypopituitarism glucose tolerance is raised, as it is in myxœdema. Injection of adrenalin is often followed by glycosuria, and in Addison's disease tolerance of glucose has been found to be increased.

That diabetes, as distinguished from the conditions classed under the names of renal glucosuria or glycosuria innocens, is essentially an endocrine disease is shown by experimental and clinical evidence, and notably by the effect of insulin in cases in which, apart from glycosuria, there are no indications of lesions of the pancreas. The recent work of Winter and Smith, in this place, gives an indication of the way in which insulin works by preparing glucose for utilisation by the tissues. Obesity also, which is often classed, with diabetes and gout, as a disease of metabolism, is certainly in many, and probably in all cases, due to disturbance of the endocrine balance. It is a prominent symptom of hyperpituitarism, of tumours of the adrenal cortex, and of suppression of the functions of the gonoids. Obviously, then, the influence of disturbances of the endocrine balance in shaping the clinical pictures of disease extends far beyond the cases in which one or more of the glands of internal secretion are seats of tumours or other gross lesions.

The normal, orderly course of metabolism is clearly dependent upon the supply of necessary substances from without the organism; of oxygen, water, and inorganic salts, of an adequate supply of fats and carbohydrates, and of proteins from the materials of which a sufficiency may be obtained of the various amino-acids which are required for reconstruction into the specific proteins. It is obvious that any lack of such supplies will entail disturbances of the metabolic processes, and that withdrawal of any important group of foods will have conspicuous effects, as witness the acetonæmia which results from withdrawal of carbohydrates.

We have learnt in recent years that a due supply, in correct proportions, of foodstuffs of which the value can be reckoned in calories—that is to say, of proteins, fats, and carbohydrates—does not alone suffice for the promotion of growth and maintenance of nutrition. Other food factors which do not rank as foods, but rather as exogenous hormones, are equally essential. The discovery of these vitamins, of which it is most appropriate that I should speak in this place, has opened up new vistas, and affords illuminating glimpses of the higher medicine.

How far the lack of vitamins is responsible for the production of particular diseases is still a highly controversial question, and we have much to learn concerning their nature and modes of action. The study of the so-called deficiency diseases, which are believed to result from shortage of vitamins, raises once more the interesting question of the way in which a negative factor can give rise to positive morbid changes. This question was already raised in connexion with myxœdema and Fröhlich's syndrome, and was met by invocation of the endocrine balance; but in deficiency diseases there is, as far as we know, no such balance to be invoked. We

must rather suppose that, to quote the words of McCarrison, "persons receiving too little vitamins are living in a state of potential morbidity, which may be converted into one of actual disease by a variety of factors that further exhaust metabolism." Amongst such factors are enumerated cold, damp, mental depression, overcrowding, and infective agents. Age, sex, personal idiosyncrasies, also play parts in the production and shape of deficiency diseases. Time will not permit me to discuss the various maladies which have been included in this class, nor their signs and symptoms, which embrace lesions of the bony structures and nervous system, œdematous swellings and lesions of the corneæ, nor to consider the parts played by external influences in their causation. I will therefore limit my remarks to scurvy, which may, without hesitation, be classed as a deficiency disease.

The influence of immaturity of the tissues is very conspicuous in that disease. The clinical picture of infantile scurvy, with its subperiosteal hæmorrhages, the exophthalmos which results from orbital hæmorrhages, and the exquisite tenderness which is one of its earliest symptoms, is so unlike that of the adult variety that continental observers long hesitated to include Barlow's disease in the scorbutic category. But the prompt response to antiscorbutic treatment leaves no doubt as to its nature. It is not improbable that the cutaneous hæmorrhages may be provoked by such slight traumatic influences as pressure on a part, and one is tempted to attribute the condition of the gums in young children to the cutting of the teeth. Undoubtedly scorbutic infants who have no teeth escape the lesions of the gums, save that they are seen over teeth which are on the point of eruption. In older infants the swelling and purple colour are limited to the neighbourhood of such teeth as have been cut. But no such explanation applies to the spongy gums of adults, and if this condition might be attributed to the sepsis which is so often present, sepsis cannot explain the affection of the gums over the teeth of infants which have not yet penetrated to the surface.

In pellagra, which also is probably a deficiency disease, the skin affection, from which that malady derives its name, recurs each year with the return of brighter days, and apparently has its exciting cause in some form of radiant energy, such as light or ultra-violet rays. Light undoubtedly exerts a profound effect upon living organisms, and, as is becoming more and more recognised, it is one of the potent external factors which influence disease. The subject has many aspects, as, for example, the protective action of surface pigmentation, the therapeutic value of protection of patients with small-pox from actinic rays, and the curative and bactericidal effects of light and ultra-violet rays. But here, as before, I will select one particular aspect—namely, the share of light in provoking lesions of the skin—which raises questions of special interest for physicians and chemical pathologists alike.

Hydroa vacciniforme is a rare form of bullous eruption which recurs in successive summers, and is confined to those surfaces of skin which are exposed to light. After each return the affected skin is left more and more severely scarred, affection of the conjunctivæ and corneæ may produce blindness, and other serious effects are loss of substance of the nose and ears and deformities of the hands. In some cases the patients have passed, from birth onwards, red urine which owes its colour to a pigment closely allied to, but not identical with, hæmatoporphyrin. This syndrome is apt to occur in several members of a family, and the porphyrinuria is evidently due to an inborn error of metabolism. In some cases the red urine does not date from birth, but has been passed for months or years.

Tappeiner and Raab found that certain fluorescent pigments, of which eosin is one, sensitise such organisms as Paramœcium to light. When a culture of Paramœcium in water to which some such pigment has been added is in part exposed to, and in part shaded from, light, the organism is killed in the exposed portion, but not in that which is shaded. Walther Hausmann showed that hæmatoporphyrin, which is a fluorescent pigment, has this power, and further, that when a white mouse receives a subcutaneous injection of 0·02 g. of hæmatoporphyrin it dies rapidly if exposed to light, but shows no ill-effects if kept in the dark. If, on the other hand, it be exposed to feeble light a chronic light disease is produced with purple swelling of the snout and ears leading on to necrosis, loss of hair, and other symptoms. The effect of the injection is only temporary, and if the animal is kept in the dark for a sufficient time, subsequent exposure to light does no harm. By a bold experiment upon himself, Meyer-Betz showed that similar effects are produced in human subjects. An intravenous injection of 0·2 g. of the pigment rendered him sensitive to light for three months. Bright light caused giant œdema, with pigmentation of excessive degree and other symptoms. More recently Howell has shown that fibrinogen also undergoes remarkable changes when exposed to light in contact with hæmatoporphyrin, and suggests that the pigment acts as a catalyst.

The metabolic porphyrins of urine and fæces, which have been thoroughly investigated on chemical lines by Hans Fischer, have similar, although less pronounced effects. In congenital porphyrinuria the presence of porphyrin in the tissues is shown by deep-brown pigmentation of the bones, and in some cases of the enamel of the teeth. Thus we are confronted by the fact that certain individuals who have in their tissues a pigment of proved photo-sensitising properties are prone to develop an affection of the skin which is obviously produced by exposure to light, and we cannot escape the conclusion that the presence of the pigment and exposure to light are jointly responsible for the cutaneous lesions. However, the matter is not so simple as appears at first sight. In some cases of life-long porphyrinuria there is no hydroa, and in some cases light appears to provoke both porphyrinuria and hydroa. Into the probable explanations of these discrepancies I cannot enter here. But allusion must be made to the fact that whereas Hausmann found that rays in the neighbourhood of λ500 were most active in producing symptoms in injected animals, it has been shown by Freund and others that actinic rays are the most potent in production of the lesions of hydroa. It is highly probable that in not a few cases of hydroa photo-sensitising substances other than a porphyrin are at work, but of these we know nothing as yet. This story of porphyrinuria and hydroa offers an excellent illustration of interaction of internal and external factors in the production of a characteristic clinical picture.

Another such example is afforded by cystinuria. Cystin is a substance eminently suitable for the formation of urinary calculi, and most cystinurics form such calculi sooner or later. But some escape such troubles, and it is probable that the exciting cause of calculus formation is an infection of the urinary tract, such as so commonly occurs.

Very few individuals exhibit such striking deviations from normal metabolism as porphyrinurics and cystinurics show, but I suspect strongly that minimal deviations which escape notice are almost universal. How else can be explained the part played by heredity in disease? There are some diseases which are handed down from generation to generation, which manifest themselves by no signs at birth or in infancy, but which tend to develop in later childhood or early adult life. Unlike congenital anomalies, they are progressive. Pseudo-hypertrophic muscular dystrophy is such a malady, as also are certain diseases of the nervous system such as Friedreich's ataxia, and myotonia congenita or Thomsen's disease. It is difficult to escape the conclusion that although these maladies are not congenital, their underlying causes are inborn peculiarities.

In support of this contention I may quote a remarkable malformation complex, of which a number of cases are on record, and of which, by the kindness of Dr. W. Stobie, I recently had an opportunity of seeing

a number of cases in members of a single family, and in several generations thereof. The association of blue colour of the sclerotics with fragility of bones was first described by Eddowes, and these conditions, which form the basis of the syndrome, are probably due to defective development of the fibrous tissues. The thin sclerotics allow the pigmented choroid to show through them, and hence their blue tint. In some six or seven of the affected families, including that which Dr. Stobie will record, there has been present a third factor—namely, progressive deafness due to oto-sclerosis—and this is confined to the abnormal members of the families in question. But the oto-sclerosis is not present from birth. It develops in later childhood or more often in early adult life, and gives rise to increasing deafness. It is characterised by lesions of the structures of the ear, one of which is fixation of the stapes by ankylosis.

Here, then, we have an acquired hereditary *disease* which occurs in intimate association with two congenital *anomalies*. If any external factor is its exciting cause we do not know, as yet, what that factor is.

Gout holds an intermediate position between the heredity maladies of early life and the diseases of elderly people. That it is hereditary in a marked degree has been shown for many centuries, as is evident from the letter in which the younger Pliny describes the death of his friend Corellius Rufus, who was a great sufferer from gout. The pathogeny of gout is still obscure, but even if the accumulation of uric acid in the blood be due to a defect of excretion, it may be that, as Minkowski first suggested, and as Gudzent holds, it is the uric acid which is at fault, and is present in an abnormal form or combination. An acute attack in a joint may be brought on by an indiscretion of diet or by a trifling injury. Even so slight a trauma as the syringing of an ear may provoke an acute attack in the pinna of a very gouty man. The liability of the tarso-metatarsal joint of the great toe is probably due to the insults to which that joint is constantly subjected. Articulations which are seats of lowered resistance, such as those which have suffered injury at any time, or those of paralysed limbs, are especially apt to suffer.

A member of a family in which the disease was previously unknown may develop gout under the influence of a sedentary city life, and a member of a gouty family may fail to escape it despite the strictest temperance in all things. The geographical distribution, racial incidence, and waxing and waning frequency of this malady suggest that many influences still unknown are concerned in its causation.

The diseases of the elderly, such as granular kidney, arterio-sclerosis, and osteo-arthritis probably have their exciting causes in the innumerable minimal insults to which the tissues, even of those who lead the most prudent lives, are subjected. They show some tendency to attack the members of certain families, but the hereditary element is not nearly so obvious as in gout. By osteo-arthritis I mean the insidious disease of one joint or many, met with in elderly people, which causes erosion of cartilages and osteophytic outgrowths around the articular surfaces. It shows itself clinically in the form of Heberden's nodes, malum coxæ senile, and similar affections of other parts. The onset of osteo-arthritis of the hip-joint is often ascribed to an injury, and there is much evidence that ordinary wear and tear is a potent exciting cause of such changes, but these causes do not suffice to bring about such a sequence of progressive lesions of the articular structures, and there must be another underlying cause. That in some cases this is an error of metabolism the arthritis of alcaptonurics shows. The subjects of alcaptonuria fail to complete the catabolism of the tyrosin and phenylalanin of food and tissue proteins, and there circulates in their blood, and is excreted in their urine, an aromatic compound, homogentisic acid. Owing to its presence the urine reduces Fehling's solution and blackens on exposure to air.

As the years go by, but seldom before the lapse of 30 years, the cartilages of the alcaptonuric become blackened, and an unusual rigidity of the cartilages of the ears suggests that they undergo some structural change. This condition, to which Virchow gave the name of ochronosis, is manifested clinically by a blue tint in the hollows of the ears, where the black cartilages show through the skin, by brown patches upon the conjunctivæ, and sometimes pigmentation of the skin. Later still, such patients are prone to develop osteo-arthritic changes in many joints, both of the limbs and spine. Their stature is apt to be reduced, partly owing to kyphosis, but largely as a result of absorption of the intervertebral discs, and they develop a peculiar gait and stance. The association of the articular lesions with ochronosis is certainly not an accidental one. The clinical picture is characteristic and in a family which includes several elderly members with alcaptonuria and ochronosis, as in one described by Umber and Bürger, all the ochronotic members may exhibit lesions of the joints and spine, from which the normal members remain wholly free.

All the evidence which I have laid before you in this lecture, and much additional evidence besides, tends to show that many factors are concerned in the causation of disease and in the shaping of its clinical pictures. Environment, that is to say healthy or unhealthy surroundings, atmospheric conditions, and personal hygiene, tend to favour or discourage the prevalence of maladies. The invasion of the organism by bacteria or protozoa, and the introduction of chemical poisons by way of the alimentary canal or respiratory tract are the essential causes of most diseases, and rank first in order of importance. Other external influences, such as traumata slight or severe, light and other forms of radiant energy, heat and cold play no unimportant parts. Lastly, negative external factors, such as deprivation of essential foodstuffs or vitamins and insufficient supply of oxygen, are potent causes of disease.

But in addition to all these there need to be taken into account factors inherent in our patients. Susceptibilities or immunities which may be inherited from their forebears, or may be widely distributed in members of their race. In a mixed population, such as ours, the influence of race is much obscured, but the Jews, who although scattered amongst alien peoples, have kept their race pure, have preserved their racial immunities and liabilities, and even their special tendency to certain inborn anomalies, such as pentosuria and Waren Tay's syndrome. Nor is evidence lacking that such peculiarities may originate de novo in an individual, but proof of this is difficult, seeing that a recessive characteristic may lie latent through generations.

Thus we are led back to something very like the doctrine of diatheses which was so much in vogue in the days of our grandfathers, but has fallen into disrepute, and finds little or no place in the medical teaching of to-day. Nor, if we read the literature of the subject, can we wonder that this is so. The doctrine came to the birth prematurely, and many of the arguments adduced in its support appear futile in the light of newer knowledge. Some of the definitions of the term are woefully obscure, and whereas for one author a diathesis was merely a predisposition, for another it was a sort of chronic disease. In the "New English Dictionary" diathesis is defined as "a permanent (hereditary or acquired) condition of the body which renders it liable to certain special diseases or affections: a constitutional predisposition or tendency." In this limited sense I, for my part, am compelled to admit the truth of the doctrine.

It has been one of my chief aims, in this discourse, to show that such predispositions exist, and, moreover, that they have their origin in deviations from the normal metabolic scheme of the species. In short, diathesis is only another name for chemical individuality.

EMPYEMA IN THE FIRST TWO YEARS OF LIFE,

WITH A DISCUSSION OF THE VALUE OF IMMEDIATE RESECTION OF RIB.

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THAT empyema as a complication of acute pneumonia in the first two years of life has a distressingly high mortality has not escaped attention. Holt[1] quotes a series of 204 cases from the Infants Hospital of New York with a mortality of 74 per cent. in the first year of life and of 59 per cent. in the second. Many other similar statistics have been published, showing a mortality of about 60 per cent. for children under two years of age. After the third year the mortality falls to a very low figure. Reference to a large number of text-books, both of general medicine and of diseases of children, shows, however, that this high mortality in little children excites little comment or passes altogether unnoticed. As a rule it is suggested that a fatal result is due to delay in undertaking operation, to an unfortunate choice in the situation of the opening made into the pleura, to the pus becoming loculated, or to failure of the lung to expand. The general impression conveyed is that such accidents are unusual and that recovery may be confidently expected.

We have made a careful examination of the records of all cases of empyema in children under two years of age admitted into the medical wards of Guy's Hospital during the years 1911–20 inclusive. In all 52 cases were admitted, of which 13 recovered and 39 died. All of the 13 which recovered and 20 of the 39 which died were submitted to the radical operation of resection of a rib. In 19 cases no operation was performed, either because the child was thought to be too ill or because the diagnosis was not made during life. Examination of the history of these cases, we think, explains the discrepancy in the statement as to the prognosis in empyema. When empyema alone was present recovery invariably took place. The high mortality is not to be attributed to the failure to achieve satisfactory drainage or to any of the mechanical difficulties mentioned above. The infants died not of the empyema, but of the generalised pneumonic infection which preceded and persisted after the formation of the empyema.

Meta-pneumonic Empyema.

Of the 13 cases which recovered 12 were examples of what may be called in this sense *meta-pneumonic* empyema. That is to say, the empyema at the time of the successful operation presented itself as a residual abscess in the pleura after the termination of the acute pneumonic process. The high mortality in infancy is due to peculiarities of the acute primary pneumonia of infancy, which, from its longer course and greater tendency to generalised infection of parts remote from the lung, seldom produces the meta-pneumonic type of empyema. It is always a favourable symptom when the rise in the temperature curve due to empyema is separate from and follows after an interval the rise due to the original pneumonic infection. This disposition, which is the rule with the short-lived lobar pneumonia of adults and older children, is, unfortunately, the exception with infants. In them, as a rule, the two curves are, as it were, superimposed one upon the other, and the empyema must be described as *syn-pneumonic*.

High Recovery Rate in Meta-pneumonic Empyema of Infancy Treated by Operation.

Of 13 cases which recovered 12 were meta-pneumonic, one only was syn-pneumonic. Of 39 cases which died, no statement can be made in five, either because the clinical or post-mortem notes are deficient, or because the course of the case was unusual and difficult to interpret. Of the remaining 34 which died, all were definitely syn-pneumonic. No meta-pneumonic case died. In only two of the 12 meta-pneumonic cases (Cases 11 and 12) was almost the whole time of the illness spent in hospital under observation, so that the temperature chart records the initial pyrexia due to the pneumonia and later the irregularity of temperature due to the empyema. The other cases had passed through the original pneumonia and were admitted suffering from the residual empyema. In three cases long periods—three, five, and six months respectively—had passed since the pneumonia. In five cases the history was very indefinite, and though it was clear that the child had been ill, and was still ill, a definite diagnosis of pneumonia had not been made. All cases in this group, however, were alike in this, that they showed no symptoms of pneumonia at the time when the diagnosis of empyema was made. High temperature, rapid pulse, urgent and distressed breathing, cyanosis, delirium, meningismus, expressionless facies, &c., formed no part of the picture. Nor was there a history of a recent and sudden onset of pyrexia. The symptoms of the meta-pneumonic empyema were less striking. The mothers, as a rule, complained of the child's wasting, of an alteration for the worse in appetite, energy, and temper, of pallor, of a persistent dry cough, or of intermittent attacks of diarrhœa. When it had been recognised that the child had suffered and recovered from an attack of acute pneumonia, these indefinite symptoms were always dated from that attack and were regarded as an unsatisfactory convalescence from it. Examination showed a fretful, pale, wasted child with a normal or but slightly irregular temperature, who became dyspnœic only upon exertion or after crying. In our series all of these quiescent meta-pneumonic cases recovered. All the others but one died.

Heavy Mortality from Syn-pneumonic Empyemata.

Of the 39 cases which died none was of the quiescent meta-pneumonic type described above. The interpretation of five (Cases 31, 32, 50, 51, 52) was difficult. The notes are appended without comment. The remaining 34 cases may be classed as definitely syn-pneumonic. In two of these the post-mortem reports are missing. Pneumonia, more or less extensive, is reported at the autopsy in 28 cases, acute or suppurative pericarditis in 10. One case had suppurative meningitis, one suppurative peritonitis, presumably of pneumococcal origin. In only one case (Case 33) was none of these fatal conditions present—the case of a young infant who died, a few hours after the resection of a rib upon the seventh day, of an acute streptococcal infection marked by high pyrexia and very rapid pulse. Acute pleurisy only was found, and there was no pneumonia and no pericarditis.

Effect of Operation in Syn-pneumonic Cases.

In the two indeterminate cases (Cases 31 and 32) which were submitted to operation the report records some temporary improvement as following the operation. For that reason they have not been classed as syn-pneumonic. In all but one of the 19 syn-pneumonic cases submitted to operation the clinical reports record either the absence of looked-for improvement or death within 24 hours. We believe that a comparison of the histories and charts of these syn-pneumonic cases with those of the meta-pneumonic cases, which all recovered, might have enabled this ill-result to be predicted with confidence. One of us, knowing nothing of the other circumstances of the cases, was enabled in almost every instance to state whether recovery or death had been the result by a glance at the record of temperature, pulse, and respiration during the first days in hospital, or, when immediate operation had taken place, by noting the single record of temperature, pulse, and respiration made at the moment of admission. Moreover, it is to be noted that of 19 cases operated upon, in nine death followed within 24 hours of operation. Nine died at varying intervals later. Case 13 is the only exception—the one

example of a case apparently syn-pneumonic which recovered after operation on the twenty-sixth day of the pneumonia. It is possible that the termination of the pneumonic process and the operation here coincided.

Period for Performance of the Radical Operation.

We think that it is clear that all meta-pneumonic empyemata should be submitted to operation as soon after the termination of the pneumonic process as possible. Delay from failure to recognise the presence of the residual collection of pus adds greatly to the risk of fibrosis and bronchiectasis in the lung involved, while after six or eight weeks there is an increasing risk that a fistulous communication with a bronchus may form. In meta-pneumonic cases the removal of the rib gives very free drainage and appears to be without risk.

We think it is equally clear that syn-pneumonic cases ought not to be operated upon by removal of a rib and with an anæsthetic until the termination of the pneumonic process. If pus in considerable quantity is present it should be removed by aspiration or continuous drainage, leaving the more radical operation to be performed later if necessary and if the child survives the pneumonia. If the syn-pneumonic cases are operated upon it appears that the mortality approaches 100 per cent. and that many of the deaths follow immediately upon the operation. As in the not dissimilar case of primary pneumococcal peritonitis, in which immediate laparotomy during the septicæmia is without benefit and may be followed by immediate death, the selection of the appropriate time for opening the residual abscess is the chief part of successful treatment.[2]

Causes of Death from Empyema in Young Infants.

It seems clear that the high mortality in young infants is not due to the presence of the empyema, but to the severity and long persistence of the underlying and preceding infection. The mortality of acute primary pneumonia in the first two years of life is very high, even in the absence of the complicating empyema—66 per cent. in the first year of life, 50 per cent. in the second.[3] We may conclude that those children who present themselves with a quiescent meta-pneumonic empyema have been fortunate in contracting a mild and short-lived pneumonic infection or have a relatively high resistance. In general the acute primary pneumonia of infants has a much longer course than the typical lobar pneumonia of adults and cases of great severity often terminate fatally many weeks after the onset, even when no empyema is present. The age-limits within which we find this high mortality in empyema are precisely those within which we find acute primary pneumonia of infantile type. After the third year lobar pneumonia of adult type replaces the infantile form, and the prognosis at once improves. The pneumonia then has a trifling mortality, and if empyema occurs as a complication it tends to be meta-pneumonic in type. There is little in the study of these cases to suggest that the spread of the infection to parts remote from the lung, to the pericardium, the opposite pleura, the middle ear, the meninges, or the peritoneum is to be attributed to the presence of the empyema or that a more timely or more radical operation might have prevented this extension. There is some tendency to treat these remote infections as complications of the empyema. Thus Goodhart and Still[4] regard them as emphasising "the importance of free drainage and the danger of delay." It may be that occasionally a collection of pus in the pleura lights up a second time a generalised septicæmic infection, but the accident must be very rare, perhaps as rare as the metastasis to the brain and the formation of a pulmonary cerebral abscess.

Certainly these additional infections, pericarditis, meningitis, otitis media, colitis, nephritis, and peritonitis, are encountered with considerable frequency in fatal cases of primary pneumonia of infancy whether empyema is present or absent.

CASE-NOTES.

1. *Operation and Recovery (Thirteen Cases).*

CASE 1. *Pneumococcal Empyema, Meta-pneumonic Type.*—Male aged 16 months. Convulsions six weeks before admission. Pneumonia diagnosed. Since then never really well. On admission "septic-looking," with an appearance of general neglect. Temp., normal; resp., 36. Dullness and distant bronchial breathing over whole of right lung; right chest completely opaque to X rays. Heart displaced to left. Aspiration: 22 oz. thick pus withdrawn. Cultivation gave pure growth of pneumococcus. Three days later excision of rib (six weeks after onset of illness). Uninterrupted recovery. Gain in weight in eight weeks after operation 4 lb. 4 oz.

CASE 2. *Empyema, Meta-pneumonic.* Male aged 13 months.—Pneumonia five months before admission. Never well since; wasting, shortness of breath, and occasional vomiting. On admission, dullness over right lung, heart displaced one inch to left. Temp., 100° F.; resp., 56; pulse, 156. Resection of rib, half pint of pus evacuated. Rapid recovery. Discharged after five weeks, looking very much better.

CASE 3. *Pneumococcal Empyema, Meta-pneumonic.* Female aged 2 years. Pneumonia three months before admission. Continued ill-health. On admission temp. normal; resp., 36–40; pulse, 130–140. Resection of rib; purulent fluid escaped from right base. Cultivation gave a pure growth of pneumococcus. Rapid recovery.

CASE 4. *Pneumococcal Empyema, Meta-pneumonic Type.*—Female aged 15 months. Pneumonia four weeks before admission. On admission, temp. just above normal; resp., 36; pulse, 130. Needled, pus withdrawn left side. Cultivation, pure growth of pneumococcus. Resection of rib (in fifth week after onset of pneumonia). Recovery after eight weeks in hospital with some irregular pyrexia.

CASE 5. *Empyema, Meta-pneumonic.*—Female aged 15 months. Pneumonia six months previously, since when she had made no progress and had put on no weight. On admission temp. subnormal; resp., 36; weight, 12¼ lb. Subcutaneous tissue of left chest (axilla) swollen and œdematous. Tender on percussion. Absolute dullness and bronchial breathing. Needled and pus withdrawn. Cultivation; mixed pneumococcus and *B. influenzæ*. Resection of rib in twenty-fourth week after onset of pneumonia. Discharged well eight weeks later. Gained 2 lb.

CASE 6. *Empyema, probably Meta-pneumonic.*—Female aged 21 months. History quite indefinite. Had always had a cough, which became worse three weeks before admission. Wasted child with protuberant abdomen. On admission temp. almost normal; resp., 34–40. Dullness with bronchial breathing at right base. Lobar pneumonia diagnosed. Exploded 13 days after admission, and pus withdrawn. Resection of rib. Immediate improvement. Discharged in good condition 23 weeks later, having gained 3 lb. 2 oz.

CASE 7. *Empyema, Meta-pneumonic.*—Male aged 13 months. History indefinite. Ten days before admission temp. 102°; became better and relapsed again. On admission temp. normal; resp., 40; pulse, 140. Dullness and bronchial breathing over right lung. Two days later explored, clear fluid with "streaks of opaque fluid" withdrawn. Cultivations remained sterile. Rib resection 25 days after admission, purulent fluid evacuated. Cultivations sterile. Rapid improvement and discharged after ten weeks in hospital with great increase in weight.

CASE 8. *Empyema, Meta-pneumonic.*—Male aged 2 years. Brought to surgery for six weeks for obscure illness with vomiting. On admission temp. 99°; pulse, 160; resp., 60. Left side of chest dull. Immediate operation and evacuation of pus; cultivation gave a pure growth of streptococcus. Rapid recovery. Discharged five weeks later.

CASE 9. *Empyema, Meta-pneumonic.*—Male aged 9 months. Brought to surgery for 17 days with obscure illness with cough and vomiting. On admission temp. normal; resp., 36; pulse, 140. Left base dull. Heart not displaced. Right lung normal. Left base opaque to X rays. Immediate operation and pus evacuated. Discharged after eight weeks, having gained 3 lb.

CASE 10. *Empyema, Meta-pneumonic.*—Female aged 18 months. History quite indefinite; cough for three months. On admission temperature normal. Left base dull. Explored and pus withdrawn. Resection of rib on day of admission. After two weeks of irregular pyrexia, rapid improvement. First three weeks after operation gained 3 lb. Later developed otitis media and radical mastoid performed. Last five weeks gained a further 3 lb. Discharged after 27 weeks.

CASE 11. *Empyema, Meta-pneumonic.*—Male aged 20 months. Admitted on sixth day of pneumonia, temp. averaging 103°; resp., 60; pulse, 150. Apparent crisis on eleventh day, temperature falling to 100°, respirations to 40, and pulse to 120. Three days later temperature rose to 103°. Whole of right side dull and distant breath sounds. Heart one inch outside nipple line. Explored and pus withdrawn. Resection of rib following day. Temperature immediately fell to normal. Uninterrupted recovery.

CASE 12. *Empyema, Meta-pneumonic.*—Male aged 15 months. Two days' history of high pyrexia and convulsions. On admission breathing rapid, averaging 60; pulse 150–160; temp. persistently above 104°. Crisis on ninth day of illness. Lobar pneumonia (right lower lobe) had been diagnosed. A week later temperature rose again to 102°. On fourteenth day of illness heart displaced to left. Chest explored and 5 oz. turbid fluid withdrawn. Cultivation gave pure growth of pneumococcus. Resection of rib following day. Slow recovery with repeated pyrexial attacks and stationary weight. Discharged after 11 weeks.

CASE 13. *Empyema, Syn-pneumonic.*—Male, aged 21 months. Admitted on fifth day of illness with pain in chest. Temperature remained irregularly high for three weeks, from 102° to 103°; pulse, 168 to 140; respirations from 40 to 60. Dullness and fine crepitations at left base. Heart inside nipple line. Child drowsy. Remaining parts of lungs harsh, dry breath sounds, no râles or rhonchi. Persistent coryza. Three weeks after admission greenish pus withdrawn from left base followed by resection of rib. Irregular pyrexia continued for a week longer; thereafter rapid improvement.

2. *Death after Operation (Twenty Cases).*

CASE 14. *Empyema, Syn-pneumonic.*—Female aged 13 months. Six weeks before admission, pneumonia diagnosed; three weeks later "fluid in chest." On admission temp., 100°; pulse, 140; resp., 60–70. Œdema of skin at right base. Bronchial breathing both bases. Explored on right side and pus withdrawn. Resection of rib same day (in sixth week of illness). Cultivation gave pure growth of pneumococcus. Temp. remained up 100° to 101°, increasing dyspnœa. Died four days after operation. Post mortem: Empyema right side; broncho-pneumonia, bilateral.

CASE 15. *Empyema, Syn-pneumonic.*—Female aged 24 months. Œdema of face and legs of sudden onset 14 days previously. On admission temp. 98°; pulse, 130; resp., 40. A week later temp. rose to 102°. Dullness and moist sounds appeared at left base. Empyema diagnosed. Explored and pus obtained. Operation same day (twenty-first day of illness). Temp. remained high; resp. increased. Condition worse. Died 11 days after operation. Post mortem: Pyogenic membrane over left lung; no free pus; pneumonia left side. No pericarditis.

CASE 16. *Empyema, Syn-pneumonic.*—Male aged 1 year. Five days previously shivering convulsions and rapid breathing. On admission temp. 105°; pulse, 160–170; resp., 50. Slight dullness in left axilla. Bronchial breathing and dullness in right axilla. Condition remained unchanged for ten days then complete dullness at left base. Explored, 2 oz. pus withdrawn. Resection of rib under local anæsthesia on twentieth day of illness. No improvement. Death the same day. Post mortem: Bilateral empyema, consolidation and compression of both lungs; bronchial glands inflamed, pneumococcal pericarditis.

CASE 17. *Empyema, Syn-pneumonic.*—Male aged 9 weeks. Cough for one week. No other history. On admission temp. 103°; pulse, 146. Dullness and absent breath sounds base of right lung. Dullness at apex and base of left lung. Explored at right base and pus obtained. Resection of rib on seventh day of illness. No improvement. Temp., 105°; resp., 84. Death the next day. Post mortem: Lower lobe of right lung, and apex and lower lobe of left lung solid with confluent broncho-pneumonia.

CASE 18. *Empyema, Syn-pneumonic.*—Male aged 2 years. A week's history of cough with pain in the chest. Diagnosed as pleurisy with "inflammation of the lung." On admission, temp. averaged 103°; pulse, 160; and resp., 80. No change for 14 days, then subsidence of pyrexia for a week. Temp. rose again, paracentesis on twenty-first day of illness, and pus obtained. Resection of rib on thirtieth day of illness and a small amount of pus evacuated. No improvement, increasing exhaustion and death 12 days after operation, on forty-second day of illness. Post mortem: Left pleura adherent to diaphragm; lower lobe adherent and covered with buttery lymph; no accumulation of pus; 2 oz. turbid fluid in pericardial sac; generalised pericarditis.

CASE 19. *Empyema, Syn-pneumonic.*—Male aged 2 years. History of sudden illness a week previous to admission accompanied by fever, noisy rapid breathing, and delirium. On admission temp., 105°; pulse, 168; resp., 60. Dullness and bronchial breathing over whole of left base. Condition unchanged and continuous pyrexia for six weeks. Left base explored and pus withdrawn. Operation on forty-second day of illness. Death next day. Post mortem: Left lung very small and contracted; extensive broncho-pneumonia on right side.

CASE 20. *Empyema, Syn-pneumonic.*—Female aged 19 months. History indefinite. Cough for a month. On admission irregular pyrexia averaging 104°; pulse, 184; resp., 48. Dullness and râles at left base. Explored and pus obtained. Resection of rib on twenty-third day after admission. Small quantity of thick pus evacuated. No improvement. Death 19 days after operation. Post-mortem report missing.

CASE 21. *Empyema, Syn-pneumonic.*—Male aged 6 months. Admitted on fifth day of illness of doubtful nature but sudden origin. Temp., 105° and remained so throughout; pulse, 180; resp., 68. Dullness at right base. Explored and pus obtained. Resection of rib on sixth day of illness and a large quantity of thick pus evacuated. Cultivations gave a mixed growth of *Streptococcus longus* and *Staphylococcus albus*. Drained well, but no improvement. Died four days after operation, on tenth day of illness. Post mortem: Right lung considerably compressed; pleura thickened; patches of broncho-pneumonia.

CASE 22. *Empyema, Syn-pneumonic.*—Male aged 11 months. Measles six months previously. Fourteen days' history of cough and sleeplessness. On admission temp. 102°; pulse, 136; resp., 56–60. Dullness of left chest. Explored and pus obtained. Resection of rib same day. Cultivation gave a scanty growth of pneumococcus. No improvement. Subnormal temperature and death on twentieth day after operation. Post mortem: Evidence of empyema and broncho-pneumonia; recent lymph over whole of left side; small abscess where tube compressed lung; right lung showed broncho-pneumonia.

CASE 23. *Double Empyema, Syn-pneumonic.*—Male aged 11 months. Admitted on fourth day of sudden obscure illness. Temp., 105°; pulse, 164; resp., 60–80. Dullness of left lung in front and behind. Bronchial breathing in left axilla. Continuous pyrexia. Resection of rib on left side on twenty-second day of illness, and thick pus evacuated. Cultivation gave a pure growth of pneumococcus. Condition became worse. Râles at right base. Resection of rib on right side on the thirty-sixth day of illness. Thick green pus withdrawn. Death the next day. Post mortem: Broncho-pneumonia left lower lobe. Recent pleurisy and adhesions right lower lobe.

CASE 24. *Empyema, Syn-pneumonic.*—Female aged 16 months. History quite indefinite. Treated as an out-patient for a month for bronchitis. On admission continuous irregular pyrexia; pulse, 130; resp., 30. Dullness and bronchial breathing at left base. Condition unchanged. Resection of rib on twenty-fifth day after admission. Small quantity of pus evacuated. No improvement. Death five days later. Post mortem: Pleurisy both sides; no pus; left base consolidated; acute nephritis.

CASE 25. *Empyema, Syn-pneumonic.*—Male aged 6 months. Admitted on third day of illness with sudden onset, feverishness, and cough. Temp., 104°; pulse, 156; resp., 60. Bronchial breathing and râles both sides of chest. Resection of rib on left side on thirteenth day of illness after continuous pyrexia. Death next day. Post mortem: Left lower lobe solid; purulent lymph over left lung; right lower lobe airless.

CASE 26. *Empyema, Syn-pneumonic.*—Female aged 1 year. Admitted to isolation ward on fourth day of measles with cough and dyspnœa. Temp., 103°, and remained high throughout; pulse, 146; resp., 48–60. Bronchial breathing right base. Empyema diagnosed. Resection of rib on twenty-sixth day of illness and pus withdrawn. Direct examination of pus showed pneumococci. Signs of pneumonia now present on left side. Death 24 hours after operation. Post mortem: Both lungs full of broncho-pneumonia; excess of fluid in pericardium.

CASE 27. *Empyema, Syn-pneumonic.*—Male aged 15 months. No history given. Admitted with signs and symptoms of empyema on the left side. Immediate resection of rib and much pus evacuated. Death shortly after operation. Post mortem: Pleura covered with thick purulent exudate; left lung showed some red hepatisation; pyo-pericardium—much pus.

CASE 28. *Empyema, Syn-pneumonic.*—Male aged 2 years. Bronchitis for a month. Two days before admission, short dry cough, vomited, rapid breathing. On admission temp. 103°–104°; pulse, 150; resp., 50–60. Pyrexia remained high throughout. Dullness and crepitations at left base. Needled and pus withdrawn. Resection of rib on fourth day of illness, then foul-smelling pus evacuated. No improvement. Death thirteen days after operation. Cultivation of pus gave pure growth of pneumococcus. Post mortem: Right lung congested; left lung airless, well-marked bronchiolectasis; trachea and bronchi congested and full of frothy mucus; bronchial glands enlarged; heart dilated.

CASE 29. *Empyema, Syn-pneumonic.*—Female aged 15 months. History indefinite. Cough and difficulty in breathing for a few days before admission. On admission temp. 104°; pulse, 160; resp., 76. Dullness over the whole of the right side. Immediate rib resection. Became steadily worse and died seven days after operation. Post mortem: Right pleura covered with fibrinous pus; patches of broncho-pneumonia at left base; confluent broncho-pneumonia right lung; some pericarditis.

CASE 30. *Empyema, Syn-pneumonic.*—Female aged 1 year. Three weeks' history of cough and dyspnœa. On admission temp. 99·4°, pulse, 140; resp., 60. Dullness left base. Resection of rib on twenty-third day of illness. Death the same night. Post mortem: Thick fibrinous exudate over left lower lobe, broncho-pneumonia in left upper lobe; some broncho-pneumonia in right lung; heart dilated.

CASE 31. *Empyema, Type Indeterminate.*—Female aged 23 months. History indefinite. One month's illness of doubtful nature. On admission temp. 102°; pulse, 156; resp., 64. Empyema, right side, diagnosed. Heart considerably to left. Resection of rib day after admission. Immediate improvement. Temp., 98·4; pulse, 138; resp., 40. On twenty-fourth day after operation temp. rose. Condition worse and remained unsatisfactory with irregular pyrexia for three weeks. Death in seventh week after admission. Post mortem: Cavity in right lung opposite operation wound; left lung adherent to chest and airless; pericardium adherent to chest wall.

CASE 32. *Empyema, Type Indeterminate.*—Male aged 14 months. Onset indefinite. On admission temp. 103°; pulse, 150; resp., 60. Dullness at right base. Needled and pus obtained. Resection of rib third day after admission; pus evacuated. Cultivation gave *Staphylococcus aureus*. Some improvement for the next month, but temp. remained irregularly high (104°); pulse about 160; and resp., 56. Death in thirteenth week after operation. Post mortem: Suppurative peritonitis and pericarditis.

CASE 33. *Empyema.* Female aged 7 months. Admitted after about a week's illness with rapid breathing and fever. On admission temp. 105°; pulse, 180; resp., 60. Dullness at right base. Crackling and moist râles all over chest. Explored, thin purulent fluid obtained. Resection of rib on day of admission. Sudden death three hours later. Examination of pus showed many streptococci. Post mortem: Nothing but empyema found; whole of right lung completely airless from compression, and surface covered with a pyogenic membrane; no pneumonia visible on either side; left lung and pleura healthy; dilatation of right side of heart.

3. *Death—No Operation (Nineteen Cases).*

CASE 34. *Empyema, Syn-pneumonic.*—Male aged 10 months. Admitted to isolation ward 14 days after onset of measles. Cough and wasting since the third day of illness. On admission temp. 104°; pulse, 160; resp., 60. Dullness and bronchial breathing at left base. Temperature remained high throughout. Condition became steadily worse. Death seven days after admission. Post mortem: Localised empyema at left base; pleurisy over right base; extensive broncho-pneumonia of left lung and right lower lobe; recent pericarditis.

CASE 35. *Bilateral Empyema discovered Post Mortem. Syn-pneumonic.*—Female aged 15 months. Bronchitis with pyrexia for three weeks. Night sweats. On admission temp. 102°; pulse, 170; resp., 56. Impaired note all over chest. Sixteen days later physical signs less marked and temperature fell. Opaque to X rays under right clavicle. Confluent broncho-pneumonia diagnosed. Condition became worse. Death eighteenth day after admission. Post mortem: Consolidation of both lungs of lobar type. Bilateral empyema. Recent pericarditis.

CASE 36. *Empyema, Syn-pneumonic.*—Male aged 7 months. Four days' illness of doubtful nature. On admission right side dull to percussion and bronchial breathing. Very dyspnœic, rapid shallow breathing, high temperature. Lobar pneumonia diagnosed. Death two days later in convulsions. Post mortem: Empyema on right side, 4 oz. pus; extensive pneumonic consolidation of both lungs.

CASE 37. *Empyema, Syn-pneumonic.*—Female aged 15 months. Admitted to isolation ward on fourth day of measles. Otitis media developed, and a week later bronchitis with a very high temp.; pulse, 170; resp., 70. Right side of chest needled on fifteenth day of measles and 4 oz. of turbid fluid removed. Death a few hours later. Post mortem: General pneumococcal peritonitis, broncho-pneumonia and empyema on right side.

CASE 38. *Empyema, Syn-pneumonic.*—Female aged 10 months. A week's history of cough. On admission temp. 102°; pulse, 170; resp., 70–80. Dullness at right base. Explored and pus obtained. Cultivation gave a growth of *Streptococcus longus*. Too ill for operation. Death the next day. Post mortem: Caseous bronchial glands; muco-pus in tubes, pleurisy over right lung; broncho-pneumonia in right lower and middle lobes and also of left lung; empyema right side.

CASE 39. *Empyema, Syn-pneumonic.*—Male aged 8 months. Cough and drowsiness for eight days. On admission temp. 103; pulse, 140–180, resp., 60–80. Dull both sides of chest, especially right base. Râles all over chest. Diagnosed as broncho-pneumonia. Bronchial breathing at left base on seventh day after admission. Explored 2 oz. pus withdrawn. No improvement. Death 12 days after admission. Cultivation of pus gave *Micrococcus catarrhalis* and *B. influenzæ*. Post mortem: Left lower lobe covered with thick buttery adherent lymph; broncho-pneumonia well marked in both right and left lungs; pericarditis; nephritis.

CASE 40. *Empyema, Syn-pneumonic.*—Male aged 6 months. Admitted moribund with broncho-pneumonia. Death same day. Post mortem: Broncho-pneumonia and an abscess cavity in right lung communicating with pleural cavity which contained 2 oz. pus.

CASE 41. *Empyema, Syn-pneumonic.*—Male aged 19 months. History quite indefinite; wasting and ill-health for some months. On admission slight pyrexia; pulse, 168; resp., 40. Dullness at left base. Broncho-pneumonia diagnosed. Both sides of chest explored but no pus obtained (a previous exploration had revealed pus). Death after seven weeks in hospital. Post mortem: Bilateral broncho-pneumonia with 2 oz. pus at right base; acute nephritis.

CASE 42. *Empyema, Syn-pneumonic.*—Male aged 9 months. History indefinite. Admitted with wasting diarrhœa and vomiting. Temp. subnormal. Died on the tenth day after admission with some pyrexia for the last two days. Post mortem: Broncho-pneumonia in both lungs; small empyema at right base.

CASE 43. *Bilateral Empyema, Syn-pneumonic.*—Female aged 15 months. Sudden dyspnœa 12 days before admission; three days later convulsions. On admission temp. 102; pulse, 150; resp., 50. Great dyspnœa, signs of consolidation at right base, râles and rhonchi all over chest. A week later pulse 168, resp. 60, and continued so for a week. Death on the twenty-eighth day of the illness; pulse, 80; resp., 80. Post mortem: Confluent broncho-pneumonia of both lungs; suppurative meningitis; bilateral empyema.

CASE 44. *Empyema, Syn-pneumonic.*—Male aged 9 months. Indefinite history; cough for a month. On admission temp. 104°; pulse, 156; resp., 60–68. Lobar pneumonia, right upper lobe diagnosed. No operation. Death 13 days after admission. Post mortem: Lobar pneumonia right lobe, pleurisy, and 1 oz. pus at right base.

CASE 45. *Empyema, Syn-pneumonic.*—Male aged 15 months. A week before admission vomited, became feverish, dyspnœa, and diarrhœa. On admission temp. 103°; pulse, 144; resp., 44–56. Signs of lobar pneumonia at right base. Temperature continued high. Sudden collapse and death on twelfth day of illness. Post mortem: Empyema at right base. Purulent pericarditis.

CASE 46. *Bilateral Empyema, Syn-pneumonic.*—Male aged 12 months. Admitted to isolation ward for measles. On admission temp. 103°; pulse, 140–160; resp., 40. Five days later temp. 105°; pulse, 160; resp., 84. Râles all over both lungs. Temp. remained high. Sudden collapse and death 12 days after admission. Post mortem: Small empyema on both sides; extensive broncho-pneumonia; marked colitis.

CASE 47. *Empyema, Syn-pneumonic.*—Female aged 11 months. No history obtainable. Admitted very ill with subnormal temp.; pulse, uncountable; resp., 60. Left chest needled and pus found. Died before operation could be performed. Post mortem: Acute pleurisy right side. Thick, buttery, purulent lymph over whole of left lung. Left lung compressed and showed broncho-pneumonia. Acute pericarditis. Acute colitis.

CASE 48. *Empyema, Syn-pneumonic.*—Male aged 2 years. Two months' history of cough and vomiting. On admission pale, rapid breathing. Temp., 101°–2°; pulse, 180 (?); resp., 80. Marked dullness over whole of right lung, râles, and bronchial breathing. Explored and pus withdrawn. Too ill for operation. Oxygen and strychnine administered. Explored again. Breathing ceased during exploration. Artificial respiration. Death. Post mortem: Right-sided empyema; right lower lobe compressed, pleura thickened; early pleurisy left side; muco-pus squeezed from both bronchi. Bronchial glands enlarged.

CASE 49. *Empyema, Syn-pneumonic.*—Male aged 16 months. In hospital at ten months with broncho-pneumonia. Five days before admission vomited, and breathing became "difficult." On admission temp. 102°; pulse, 150–160; resp., 60. Explored five days later and 10 c.cm. pus withdrawn. Irregular pyrexia. No operation. No improvement. Death seventeenth day of illness. Cultivation of pus, *Streptococcus longus* and pneumococci. No post mortem.

CASE 50. *Bilateral Empyema. Type Indeterminate.*—Male aged 10 months. History very indefinite. Eight weeks ago diarrhœa, recovered. Four weeks ago return of diarrhœa. On admission temp. 102°; pulse, uncountable; resp., 36. Blue lips, semi-comatose. Pyrexia continued. Death seven days after admission. Post mortem: Acute enterocolitis; bilateral empyema.

CASE 51. *Empyema. Type Indeterminate.*—Male aged 6 months. History quite indefinite. Had been dieted for wasting. On admission temp. normal; ten days later temp. 105°; pulse, 150; resp., 56. Bronchial breathing and dullness at right base. Lobar pneumonia diagnosed. Crisis 11 days later. Right base still dull. Explored and pus found. Temp. rose to 103° on twentieth day after crisis, and remained irregularly high throughout. Subcutaneous abscess developed over site of needling. Eight weeks after crisis bronchial breathing at both base. Temperature became higher. Death 13 weeks after admission. No post mortem.

CASE 52. *Empyema. Type Indeterminate.*—Male aged 20 months. Eleven weeks before admission double pneumonia diagnosed. On admission temp., 98·4°; pulse, 144; resp., 40. Dullness and bronchial breathing left apex and right base. Explored third left space 1 oz. pus obtained. Temp. rose slightly. Further exploration without result. Cultivation gave a pure growth of pneumococcus. Decision not to operate. Increasing dyspnœa and death 12 days after admission. Post mortem: Empyema right base, less marked at left base; extensive pleurisy in front; pericardium full of thick green pus, adherent in places; purulent bronchitis; lungs compressed; no broncho-pneumonia.

CONCLUSIONS.

1. The high mortality of empyema in the first two years of life is due to the specific character of acute primary pneumonia of infancy.

2. Meta-pneumonic cases almost always recover. Syn-pneumonic cases almost always die.

3. All meta-pneumonic cases should be dealt with by excision of rib as speedily as possible.

4. Syn-pneumonic cases should not be dealt with by excision of rib until after the termination of the pneumonic process. Some form of paracentesis should be practised as a temporary measure.

5. In syn-pneumonic cases death occurs from the original pneumonia and from metastasis of infection to other parts rather than from the empyema.

References.—1. Holt: Diseases of Infancy and Childhood, eighth edition, 1922, p. 545. 2. Cameron: The Relative Value of Immediate and Delayed Laparotomy in Pneumococcal Peritonitis, Proc. Roy. Soc. Med., 1912, vol. v. (Clinical Section), pp. 123–133. 3. Holt: Loc. cit., p. 502. 4. Goodhart and Still: Diseases of Children, eleventh edition, 1921, p. 458.

DONATIONS AND BEQUESTS.—In response to the special appeal for £15,000 in aid of Ancoats Hospital, Manchester, the donations received up to date amount to £4323. During the past year the Royal Schools for the Deaf, at Old Trafford, Manchester, have received the following legacies: £500 from the late Sir James E. Jones, £200 from the late Miss Elizabeth Hilton, and £1000 from the late Miss Violet Robinson.—The late Mr. John Wall Fothergill, of Southport, bequeathed £10,000 to the National Institute for the Blind, London.—At the annual meeting of the subscribers to the Leigh Infirmary, Lancashire, it was reported that during the year about £6000 had been contributed to its funds and that practically all the collieries and weaving sheds were contributing.—The Manchester Royal Infirmary has received a legacy of £500 from the late Mrs. Ermiah Ingham.

CONGENITAL DEFECT OF THE PECTORALIS MUSCLES.

BY E. B. MORLEY, M.B., B.S. LOND.

CONGENITAL defect of the pectoral muscles, though described in most text-books, is seldom seen. Schlesinger saw five cases in 54,000 patients in Vienna. There are about 220 cases recorded in the literature. R. Bing gives the bibliography up to 1902 and E. Clarke from 1902–1911. Appended to this paper are references to 18 cases recorded since then.

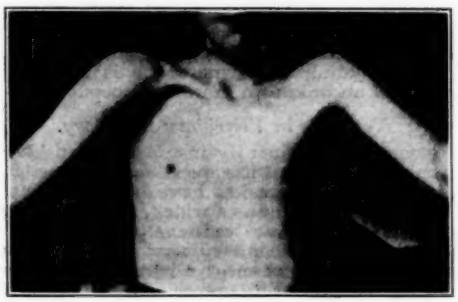
The extent of the deficiency is variable. Complete absence of pectoralis major and minor is rare, the clavicular portion of the pectoralis major being nearly always present to some extent. A case (post mortem) showing complete absence of both muscles—on the left side—without even fascial bands to represent them, was described in THE LANCET by A. G. Severn during 1921.[18] Only one case has been noted where the defect was bilateral. Absence of the pectoralis minor unassociated with defect of the pectoralis major does not occur; the defect is usually greater below than above; and this is important when the embryological aspect is considered. The influence of heredity is uncertain, for though Clarke quotes only one instance (where a father and two sons were affected) it is not uncommon to find—as in two of my cases—some members of the family with congenital defects of other structures.

Possible Causes of Pectoral Defect.

1. In some animals the pectoral group of muscles is complex. Thus, Lander describes six pectoral muscles in *Trichosurses vulpecula*. So also in man, definite grouping of fibres of pectoral muscles does occur, and it has been suggested that congenital deficiencies may be explained along the lines of phylogenetic retrogression.

2. Pressure of forearm or of knee of fœtus in utero causing atrophy and fibrosis of developing muscle plates—a sort of ischæmic contraction. In favour of

FIG. 1.



CASE 1.—Whole of right pectoralis major and minor absent except for a thin slip.

this is the fact that portions of the muscles have been found represented by a fibrous cord extending from the chest to the humerus.

3. Absence of external and internal anterior thoracic nerves. This rather begs the question. One would not be likely to find a nerve present without its corresponding muscle to innervate.

4. The explanation that falls in with most of the facts is that of Lewis. He points out that in the 9 mm. embryo, the primitive pectoral premuscle mass lies mostly above the level of the first rib. In the 11 mm. embryo it extends lower, but has no attachment to ribs or to humerus. It is still undifferentiated into its component parts, except that the pectoralis minor is indicated by a bulge towards the coracoid. In the 16 mm. embryo the clavicular portion is split off, and then the remainder divides into the sternal portion and the pectoralis minor.

Here, then, is a possible explanation of the fact that the clavicular portion is seldom absent; the pectoral anlage has been formed, but has not become differentiated. It also suggests a reason for the fact that the defect is always greatest towards the caudal end. The muscle mass has a cervical origin and has failed to migrate caudally to an extent sufficient for attachment to ribs and sternum to take place.

Eight Actual Cases.

Since 1913 I have come across eight cases of pectoral defect. The first case was seen in a private patient, and the remainder in recruits for the army. The photographs of Cases 1, 7, and 8 indicate three different degrees of defect.

FIG. 2.

CASE 7.—Clavicular portion of pectoralis major, and part of sternal portion attached to manubrium and second rib, well developed. Remainder of pectoralis major and whole of pectoralis minor absent.

CASE 1.—Male, aged 13, seen in 1913. (See Fig. 1.) Defect discovered in routine examination for a cough. A healthy boy; no abnormality noticed by his mother. Except for a thin slip from the clavicle, the whole of the right pectoralis major and minor are absent. This produces an enormous cavern in the right axilla, and is most noticeable when the arms are raised and pressed firmly towards each other on some fixed object. The nipple is neither absent nor displaced upwards, as in some of the cases described in the literature. The boy's father has a supernumerary toe on the right foot, and a niece of the father had supernumerary right and left thumbs.

CASE 2.—Male, aged 34, seen Feb. 9th, 1917. Collier, recruit. Except for a small clavicular portion, the remainder of the pectoralis major and the whole of the pectoralis minor are absent on the right side. Nipple normal in size and position. The recruit had never noticed any disability, but said he had been rejected previously for the army, because (he was told) he had a "fibrous" lung. On examination no signs were found in the chest. The man's sister had a cleft palate.

CASE 3.—Male aged 24. Seen Feb. 9th, 1917, the same day as Case 2, but no relationship could be traced. Collier, recruit. Clavicular portion of pectoralis major present. Sternal portion and pectoralis minor absent on the right side. Nipple normal in size and position. No brothers or sisters. Parents said to be normal.

CASE 4.—Male aged 31, seen May 14th, 1917. Potter, recruit. Except for the usual clavicular portion, pectoralis major and minor on left side absent. Nipple normal in size and position. No history of abnormalities in other members of family.

CASE 5.—Male, aged 32. Seen May 30th, 1917. Railway clerk, recruit. In this case the only portion missing was the lower half of the sternal portion of the pectoralis major below the third rib on the left side, and but for the fact that I had seen previous cases would certainly have escaped notice.

CASE 6.—Male, seen June 22nd, 1917. Recruit. Exactly the same as Case 5, except that the missing lower portion of pectoralis major is on the right side. Nipple present. No family history of deformities.

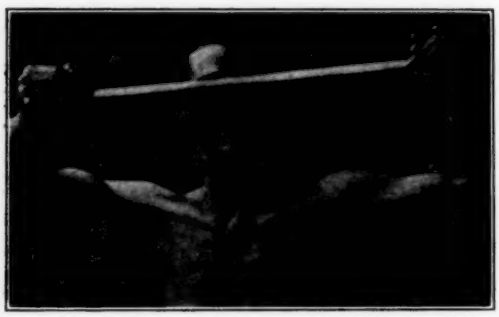
CASE 7.—Male, aged 19, seen Sept. 22nd, 1920. Recruit. (Fig. 2.) Defect on right side. Clavicular portion of pectoralis major, and that part of the sternal portion which is attached to manubrium and second rib, present and well developed. The remainder, and pectoralis minor, absent. Nipple normal in size and position. The recruit made inquiries, but could find no similar condition in othre members of the family.

CASE 8.—Male, aged 20, seen December, 1921. Soldier. (Fig. 3.) Defect first noticed at age of 14 during an attack of pneumonia. On right side sternocostal fibres from second to third ribs present, but feebly developed. On left side, pars clavicularis is well developed, but, except for a small slip from the third rib, remainder of pectoralis major and whole of pectoralis minor absent. No alteration in size or position of nipple. No family history of deformities.

Summary.

Eight cases of defect of the pectoral muscles are described, all in healthy males, showing four different degrees of defect. In no case was the patient aware of the condition and no lack of muscular power could be discovered. In no case was the nipple absent or displaced. In all cases some representative of the pectoral anlage was present, even if only a small clavicular slip. In Case 8 there was some degree of bilateral defect; in the remainder, five were on the right, two on the left. In two cases totally different types of congenital abnormality were found in other members of the family.

FIG. 3.



CASE 8.—Sterno-costal fibres from second to third rib feebly developed; except for small slip from third rib, remainder of pectoralis major and whole of pectoralis minor absent.

The fact that five of the cases were seen in the short period of five months suggests that the condition is much commoner than imagined, and that the lesser degrees of defect are only likely to be noticed if other cases have already been seen.

In cases seen post mortem, it would be interesting to note the presence of compensatory hypertrophy in other muscles, any alteration in the bony structure of the shoulder girdle and changes in the disposition of coraco-humeral ligaments and fascial planes. Congenital defect of the pectoral muscles follows a definite line of distribution, greater below than above, and probably reproduces various stages of fœtal development, as do the various degrees of cleft palate.

REFERENCES.

Bing, R.: Virchow's Archives, clxx., 1902, 175. (Gives bibliography up to 1902.)
Clarke, E.: Jour. Anat. and Physiol., London, 1915, 155. (Gives bibliography from 1902–1911.)
Lander, K. F.: Jour. Anat., London, 1917–18, iii., 292.
Lewis: Johns Hopkins Hosp. Bull., 1901, xii., No. 121, 172.

Further Cases recorded since 1911.—1. Akhun, I. I.: Voyermo. Med. Jour., St. Petersb., 1914, ccxxxix., med-spec., 358. 2. Amerling, K.: Casop. lék. cesk., Praze, 1911. 3. Burgerhout, H.: Nederl. Tydschr. v. Geneesk., Amsterdam, 1912, 1497. 4. Carrau, A.: Pediatria espan., Madrid, 1917, vi., 247. 5. Cockayne, P. A.: Proc. Roy. Soc. Med., London, 1918–19, xii., Sect. Dis. Ch., 59. 6. Dianderas, J. C.: Cron. med., Lima, 1918, xxv., 134. 7. Friedrich, W.: Zentralblat. f. chir. u. mech. Orthop., Berlin, 1914, viii., 169. 8. Gardiner: Jour. Amer. Med. Assoc., 1915, lxiv., 508. 9. Grieg, D. M.: Edin. Med. Jour., 1912, viii., 248. 10. Ihijima, S.: Ztschr. f. Mil. Aerzte, Tokyo, 1912, No. 36, 89. 11. Kajava, Y.: Finska läk. sällsk. handl., Helsingfors, 1915, vii., 1421. 12. Laan, H. A.: Nederl. Tydschr. v. Geneesk., 1912, T., p. 61. 13. Leroy, M.: Bull. Soc de Méd. du Nord, Lille, 1912, 74. 14. Tedeschi, C.: Archiv. f. Orthop., Wiesbaden, 1913–14, xiii., 276. 15. Teuchter, J. L.: Lancet Clinic, Cincinnati, 1915, cxiv., 22. 16. Weckbecker, H.: Ein Fall von congen. Brustmuskeldefekt, Bonn, 1911. Th. Wurm. 17. Jarratt, K. A.: Brit. Med. Jour., 1921, i., 369. 18. Severn, A. G. M.: THE LANCET, 1921, ii., 560.

Mill Hill, N.W.

THE EXPERIMENTAL PRODUCTION OF A FATAL NEPHRITIS

WITH A FILTER-PASSING VIRUS OF NERVOUS ORIGIN.

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THE question of the ætiology of many cases of nephritis in man remains obscure, and in view of the importance of the disease and the frequency with which conditions associated with urea retention lead to death, any observations which will help to elucidate the matter naturally claim one's attention. In this paper it is not proposed to consider nephritis caused by known animal and vegetable parasites or their toxins, poisons, &c.; the discussion will be confined to that occurring as a complication or sequelæ of filter-passing virus diseases, as well as with those cases of acute and chronic Bright's disease whose causal agent is unknown. By the intracerebral inoculation of a filter-passing virus obtained from nervous tissue we have been able to produce a fatal nephritis, uncomplicated by the presence of bacteria.

Nephritis following on an attack of scarlet fever is a variety of kidney inflammation which is of great interest, for there is the question as to whether the specific filter-passing virus or the accompanying streptococcus is the primary ætiological factor. Although the latter parasite may be seen and isolated from the throat, blood, kidneys, &c., of a large proportion of cases, the chief histological features of the nephritis are usually not those of the reaction against an ordinary bacterium, but rather against that of a filter-passing virus. In some cases the streptococcus cannot be recovered, and, on the other hand, streptococcal septicæmias very often produce no nephritis at all, although neither of these objections rules out the possibility of the streptococcus being the primary factor in the disease. The tissue reactions form an important guide in this, as in so many other conditions, where one is searching for the cause of an unknown morbid process.

Nephritis in Veterinary Pathology.

It seems that frequently insufficient consideration is given to this side of the question by investigators, and far too many parasites have been designated as the causal agent of diseases which, on the face of the histological findings, are extremely unlikely to play any more than a secondary part in the disease in question. Several instances might be mentioned in human pathology, but it is especially in the veterinary field that one meets with so many examples of injudicious and unconvincing publications where an ordinary vegetable parasite is given as the active agent when the clinical and histological features are obviously those of a filter-passing virus disease. In veterinary pathology nephritis is frequently recognised as a complication of diseases due to filter-passers—distemper of dogs, swine fever, foot-and-mouth disease, &c.; while in medical pathology it is associated with scarlet fever and more rarely with measles. Also, the condition known as trench nephritis is usually thought to be caused by a filter-passer. It is not, as a rule, considered that German measles, varicella, &c., as well as many other filter-passer diseases, are followed by renal inflammation: on the other hand, the ætiology of a large number of cases of acute and chronic Bright's disease remains obscure. Metchnikoff's theory of the absorption of intestinal toxins would appear to be a highly feasible explanation, although it is probable that filter-passing viruses may play a much more important part than is generally recognised. Our experiments on

encephalo-myelitis and nephritis of rabbits would appear to be of some interest in this connexion.

Observations in Animals.

The earliest observations of lesions of encephalitis in normal rabbits are, as far as we are aware, those of Bull.[1] This author was experimenting with injections of streptococci, and found in his animals a mononucleosis of the central nervous system. Similar lesions were found in one of three rabbits which had succumbed to a bacillary septicæmia. Later, Oliver[2] described a similar condition in her rabbits which had been subjected to repeated large doses of arsphenamin, over a period of ten days; such animals dying, as a rule, from the effects of this procedure. However, experimental rabbits which died in a few days following the injection of the same drug showed similar lesions of the central nervous system, and thus led her to examine the supposedly normal animals of her stock as well as a number obtained from the public markets. In both instances about 20 per cent. of the animals showed lesions of encephalitis.

A Spontaneous Outbreak among Stock.

We had not encountered the disease previous to the winter of 1921–22, when an outbreak occurred spontaneously in our stock. During the course of some experiments on lymphadenoma and allied diseases several of our animals succumbed in a rather unexpected manner, and post-mortem examinations failed to reveal any obvious lesions in the thoracic or abdominal viscera. Histologically, however, lesions characteristic of those associated with the presence of a filter-passing virus were demonstrable in the central nervous system and in several of the other organs.

At the time of the publication of our first communication on the disease,[3] we were unaware of the observations made previously by Bull and Oliver, and there is no doubt that the disease prevailing in America is the same as that occurring in this country. It is curious that while in our stock, in the original epidemic, death occurred in practically every case in which symptoms were evident, the animals of these authors were mostly in good health until a fatal experimental dose of arsphenamin or streptococci was given; and subsequent examination of the central nervous system revealed the unexpected round-celled infiltration of an encephalitis. We are unable to gather from Oliver's paper exactly how her animals reacted to the disease clinically; she mentions in one place that they "rarely die," but it appears that, generally speaking, health was normal previous to the utilisation of the animals for experimental purposes.

Subsequent Observations: Absence of Nervous Symptoms and Many Recoveries.

Although in our original epidemic symptoms of the disease indicated practically a fatal prognosis, subsequent observations have shown that many rabbits may have lesions of the central nervous system without any apparent disturbance of their health. Some may show slight symptoms, and others even a rather severe indisposition, and eventually make an apparently perfect recovery. Among our stock we can never be certain that an animal is not suffering from the latent disease which may at any time lead to a rapidly fatal termination. Outside these laboratories we have, up to the present, not met with the spontaneous disease, and the normal animals examined have had no histological changes in the central nervous system. It was very soon noted that the extent of the lesions of the central nervous system did not follow closely the severity of the symptoms. Among the first 16 fatal cases, on several occasions, only insignificant changes could be demonstrated, while in other animals a very intensive round-celled invasion was observed, extending the whole length of the central nervous system, although much more marked in the brain than in the cord. The cells were scattered or agglomerated into foci, or surrounded the vessels in the typical manner. Chromatolysis and neuronophagy were also sometimes present, together with an invasion of the meninges. The cerebro-spinal fluid varied from normal to a well-marked mononucleosis, but cultures of the fluid, as also those of the blood, remained invariably sterile, with the exception of an occasional accidental contaminating colony.

In view of the absence of nervous symptoms, with often an extremely slight degree of microscopical evidence of disease of the nervous system, and that histological examination of the kidneys revealed considerable damage to the organs, together with less extensive changes in the liver and spleen, it was evident that possibly we were dealing frequently with cases of renal death and not with death of a nervous origin, although, undoubtedly, some of our cases had died from the changes in the nervous system. Thus, in our later animals, not only was a more careful microscopical examination of the kidneys and urine carried out, but biological tests of renal function on the blood and urine were performed whenever possible. The results obtained were most conclusive evidence of death occurring, in the majority of cases, with urea retention.

Ætiology of Spontaneous Nephritis of Rabbits.

Spontaneous nephritis of rabbits has long been recognised, and numerous workers have come across the disease while studying the experimental production of nephritis in this variety of animal. From the examinations made by Bell and Hurtzwell,[4] and by the several authors they mention, it appears that among 400 animals, the kidneys of about 15 per cent. show evidence of renal disease. It is only recently that we have encountered the spontaneous nephritis, which has been usually accompanied by lesions of encephalitis. According to Bell and Hurtzwell, "we are not dealing . . . with a diffuse interstitial nephritis such as occurs in diphtheria and scarlet fever, but with discrete foci which cause atrophy of the entire tubule system by destroying its central portion." This describes very well the appearance of the kidneys of animals which remain more or less active and healthy, but in the case of death with urea retention it is not always a question of discrete foci, which, although present, may not dominate the picture. A glomerular nephritis is sometimes met with, but still more frequently it is the convoluted tubules which suffer most severely, and the lining cells of which may be so destroyed that only an occasional normal portion of this part of the tubule can be seen. It is unfortunate that in the publications on spontaneous nephritis of rabbits which we have perused we have found no evidence of the examination of the central nervous system made in conjunction with those of the kidney, and Oliver does not mention specifically whether the kidneys were examined in her cases of spontaneous meningo-encephalitis.

Bell and Hurtzwell contend that in all probability the virulent staphylococcus which was isolated on two occasions from their cases of spontaneous nephritis was the causal agent of the disease, an opinion with which we cannot agree, although the said staphylococci were isolated in pure culture. It seems more probable that the staphylococcus was associated with a specific filter-passing virus, as a secondary infection, examples of such an association being frequently found in diseases of man and animals. The fact of there being primarily a mononuclear invasion and not a polynuclear one should make one hesitate to assign an ordinary bacterium as causal agent of the disease, although, of course, some special bacteria, such as members of the acid-fast group and a few other related forms, do excite the migration of lymphocytes. An invasion of lymphocytes under the sole stimulus of an ordinary bacterium would appear to occur with a frequency about equal to that of a polynuclear invasion excited by a filter-passing virus;

that is to say, at the most it is very exceptional, and probably really does not occur at all.

Urea Content of the Blood.

The estimation of the urea content of the blood was carried out by means of a micro-method adapted to the small amounts of blood available, the technique being, briefly, as follows: 0·2 c.cm. of blood was incubated at 50° C., with 1 c.cm. of water, and 0·2 c.cm. of a 10 per cent. solution of urease, ammonia developed by the enzyme action being fixed by the acid phosphate present in the urease solution. The proteins were precipitated by adding 0·3 c.cm. of a 10 per cent. solution of sodium tungstate and 0·3 c.cm. of 2/3 normal sulphuric acid, the solution diluted to 8 c.cm. and filtered. 5 c.cm. of this filtrate (representing 0·125 c.cm. of blood), diluted with 5 c.cm. of water, were treated with 2 c.cm. of Nessler reagent, and the resulting brown colour compared with that obtained by nesslerising a standard solution of ammonia; the standard ammonia solution being of such a strength that 1 c.cm. was equivalent to 0·0001 g. of urea. The comparisons were made in a Kolber colorimeter. The method has been previously tested upon a large number of human blood specimens and control urea solutions. The results of these tests, which are the subject of another paper,[5] have convinced us of the accuracy and usefulness of the method.

Single Causative Agent of Spontaneous Forms of Nephritis and Encephalomyelitis.

As mentioned in one of our previous communications,[6] we arrived at the conclusion that the spontaneous nephritis and the spontaneous encephalomyelitis of rabbits were probably caused by a single virus, and experiments which we have carried out in this direction certainly support our view. The most conclusive experiments with reference to this question were performed on animals at the Brown Institution. Neither of the conditions had been observed among the stock of this institution, but just prior to the commencement of our experiment we took the precaution to make a careful examination of six normal animals, selected haphazard, and we were unable to find any histological changes in the organs.

Two litters of four young and their mother were taken for the experiment and removed to another stock room, situated in an entirely separate building. The four young of one litter were injected intracerebrally on July 12th, 1922, with a small quantity of an emulsion of spinal cord, preserved in 50 per cent. glycerine in saline, in cold storage, for six months, of a rabbit which had died from spontaneous encephalomyelitis. The mother was left with her young and served as a control, while the second litter of four young and their mother were placed in an adjacent cage, a few cubic centimetres of the glycerinated emulsion being sprayed on the bedding in the bottom of the cage. For several months all the animals seemed quite healthy, but it was noticeable that those which had received an intracerebral injection did not grow into such robust animals as those of the second litter. It will be unnecessary to go into detail as regards the subsequent history of these animals. It will suffice to say that the four inoculated animals died at intervals varying from three to four and a half months after injection, and their mother died five months after this date. The other litter and their mother are still living and apparently in perfect health. The duration of acute illness varied from one to two days. The animals at death were thin, and a certain amount of coccidial disease of the liver was present in three of them. But this, evidently, was not the cause of the death, as there was an absence of diarrhœa, purulent secretion from the eyes, &c., which one usually associates with death from this variety of animal parasite; and in the mother and remaining young there was no trace of coccidial disease. As a matter of fact, coccidiosis has been endemic among the stock of the Brown Institution for years, but the central nervous system and kidneys of the animals which died never showed changes comparable to those with which we are at present concerned here.

Histological Findings.

The histological findings in the animals now under consideration were very illuminating; the typical lesions of encephalitis and a slight degree of meningitis were found, but the most interesting feature was the presence of nephritis of varying intensity. The blood-urea concentration was very high—viz., 0·4 to 0·53 per cent.—with the urine, in those cases where obtainable, showing a correspondingly low figure. The normal figure of rabbits, guinea-pigs, cats, and dogs we have found to vary from 0·025 to 0·05 per cent., being about the same as that found in man. Thus, there appears to be no doubt that by the inoculation of a filter-passing virus into the brain of these four animals one produced a fatal inflammation of the kidneys, and death with urea retention. True, it may be objected that our inoculum consisted of a brain emulsion and not of a filtrate; on the other hand, cultures of the blood, cerebro-spinal fluid, &c., have remained uniformly sterile, and the histological findings are characteristic of those found associated with the presence of a filter-passing virus. Needless to say, experiments with Berkefeld filtrates, similar to those under discussion, are being undertaken, so as to exclude, as far as possible, the action of an ordinary vegetable parasite. We say as far as possible, because numerous experiments with porcelain filters have shown us how, under certain circumstances, bacteria may pass such filters, even those of a much finer texture than the Berkefeld. Experiments with the heated virus will, in addition, be performed.

Established Presence of Filter-passing Virus.

We consider, then, that there is no reasonable room for doubt that the animals in question died from the presence of a filter-passing virus in the kidneys, the virus being the sole agent in the production of the nephritis, and unassociated with any ordinary vegetable parasite. Our results are in accordance with those of Condrea,[7] who has reported the production of an experimental nephritis in rabbits as the result of the intracerebral injection of vaccinia virus, and we are under the impression that nephritis has also been produced in rabbits experimentally with encephalitis-lethargica material. One assumes that these investigators took the precaution to exclude the presence of spontaneous nephritis among their stock. It will be noted that the uninoculated mother succumbed soon after the death of her four inoculated young—a clear case of cage infection. On the other hand, the second litter of the mother and four young remain healthy, although material which was proved by injection to contain virus was scattered over the bedding. This is an example of what one finds frequently when experimenting with related viruses, such as that of distemper of dogs, &c.—viz., cage infection from animal to animal, but not from fomites to animal—when one is using the homologous virus. The case is different with a heterologous virus; thus while it is comparatively easy to infect, by experimental inoculation, some varieties of animals with the virus of human encephalitis-lethargica or infantile paralysis, it is rarely that one meets with cage infection.

Four rabbits which had been extensively inoculated on the skin of the back with vaccinia virus, and after showing a typical eruption, made, apparently, a complete recovery, were given to us by the kindness of Dr. M. H. Gordon. Of these animals, one was very ill just before being anæsthetised, the remaining three being quite healthy. The blood-urea concentration of the animal which was ill was 0·6 per cent., the highest figure we have obtained in man or animal; that of the three other animals was normal in amount. Presumably, this animal suffered from spontaneous nephritis, for it had only been inoculated with vaccine ten days prior to death, and it is unlikely that the

latter virus would have destroyed the kidneys so rapidly.

It is only occasionally that we have been able to detect a rising blood urea figure in animals some time prior to their death. It is usual for it to keep normal even when the animals are getting thin, and are obviously ill, and the suddenness with which death occurs is often most unexpected. A complete examination of the urine has not been possible, as we have no special cages for the collection of the urine. As far as we have been able to investigate isolated specimens, the urea concentration of the urine has been found to be low when the blood urea figure was high, and albumin is usually present. Other pathological and normal chemical constituents of the urine have not been estimated. The urine is usually turbid with granular casts and renal epithelial cells, but although an abundance of well-formed tubule cells indicates an acute inflammation, we have on no occasion observed the presence of red blood cells. It is to be regretted that sugar estimations of the blood and urine were not made, for in several cases the symptoms, taken as a whole, were very suggestive of glycosuria.

Clinical Symptoms of the Spontaneous Disease.

The clinical features of the spontaneous disease are not very striking; indeed, on occasions, the course is so rapid that from the onset of symptoms to death there is a lapse of time of less than 24 hours. The onset is usually insidious, and the first indication of any trouble is, in most cases, wasting of the animal. The temperature is, at times, markedly subnormal; 97·4° and 97·7° F. in two cases; among a very large number of temperature observations on this variety of animal, normal and diseased, we have never recorded such low figures unless death was imminent. A frequent feature is the patchy shedding of the hair, which may occur in several situations, the most usual being at the back of the neck and along the spines as far back as the mid-lumbar region. Discharge from the eyes, without much inflammation, may also occur, but in rabbits this condition is met with in several other diseases, and is thus not of much value from a diagnostic point of view. It is, however, as a rule, unaccompanied by diarrhœa. Respiration is normal, and there is a complete absence of any paralytic phenomena. There may be considerable anæmia, with a high colour-index and the presence of numerous erythroblasts, a condition of the blood which we have found associated with distemper of dogs. As the disease progresses, emaciation becomes profound, although the appetite seems to be fairly good; and for a considerable time the animal keeps bright and active in spite of general muscular weakness. In no case have we observed œdema of the subcutaneous tissues. Convulsions may occur as a terminal phenomenon, and in two cases the tongue has been severely bitten, presumably during a convulsion. During the whole course of the disease there remains nothing to indicate implication of the nervous system. Death takes place during a convulsion, which may or may not have been preceded by a short period of coma, or it may take place in coma. The length of time for which an animal may survive after the first symptoms have been noted has varied from 15 hours to several days.

It appears that complete recovery may occasionally take place after the advent of symptoms, favourable signs being a rise of temperature, an increase in weight, and renewal of hair. With the experimental disease recovery is more frequent, and a good number of our animals have shown no evidence at all of any effect of the inoculation. The majority of the animals which harbour the virus naturally keep in apparently perfect health, but once symptoms occur in such animals, a fatal termination, in our experience, almost invariably resulted.

Post-Mortem Observations.

Among our rabbits we have had in all 36 deaths in which no evident cause of death was observed on post-mortem examination. Of these 36 animals, the central nervous system was examined histologically on 34 occasions, and the kidneys on 22 occasions. Lesions were found in the former situation 28 times, and in the latter situation 22 times. The cerebro-spinal fluid was examined in 26 cases, a mononucleosis being found on 11 occasions. The urea concentration of the blood was tested in 19 cases, and found to range from 0·2 per cent. to 0·6 per cent. on 16 occasions. In no case has there been both a mononucleosis of the cerebro-spinal fluid, and a high blood urea; and it is probable that in our early cases, when the cerebro-spinal fluid was normal with but slight lesions in the nervous system, and in which the blood was not examined for urea, death was really due to the renal lesions, with urea retention. We consider, therefore, that among our animals death of a renal origin was really over twice as frequent as death of a nervous origin. Besides the above-mentioned 36 animals, we have killed 20 controls, all of which were apparently in good health although several of them had been inoculated with different filter-passing viruses. Lesions were found in the central nervous system and kidneys on several occasions, but in no case was there a mononucleosis of the cerebro-spinal fluid, nor was there any abnormality in the urea concentration of the blood or urine.

The table given below shows our results in fractions, the numerator denoting the number of times in which positive results were obtained, and the denominator the number of examinations made. A positive result in the case of the central nervous system implies a round-celled infiltration, in the cerebro-spinal fluid a similar infiltration, in the case of the kidneys the presence of a well-marked nephritis, and in the blood a urea concentration of at least 0·2 to 0·6 per cent.

Number of—	C.N.S.	C.S.F.	Kidneys.	Blood urea.
Fatal Cases (36).				
Positives	28	11	22	16
Examinations ..	34	16	22	19
Controls (20).				
Positives	7	0	5	0
Examinations ..	19	16	16	9
Totals (56).				
Positives	35	11	27	16
Examinations ..	53	40	38	28

Variations of Lipase Content of Blood.

In view of the nature of the virus concerned in this disease of rabbits it was thought probable that variations in the lipase content of the blood would be found to exist in different stages of the disease, and this idea was not difficult to confirm by experiment. Variations are found in diseases due to acid-fast bacilli, and would presumably be also evident in those caused by animal parasites, but one would expect to find the most marked changes in the case of filter-passing virus diseases owing to the process being, as a rule, more acute, and the degree of immunity in recovered cases being very high. The associated mononuclear activity in the above-mentioned group of diseases must evidently be closely related to the amount of lipase present, and it would seem that the secretion of lipase is possibly in the nature of an immune reaction.

Our first procedure in this direction was conducted with a view to the ascertaining of the lipase content of the blood in normal man and animals. The majority of the bloods tested came from man, rabbits, and guinea-pigs, but we were also able to procure several post-mortem specimens from cats and dogs which had been destroyed on account of old age, mange, &c. The normal figures we obtained were as follows, that of some being, of course, well known previously, and our results confirming those of other workers. Over 200 of these tests have been performed.

The figures relate to the amount of decinormal soda solution, measured in cubic centimetres, required to

neutralise the acidity produced by the fermentative action of the lipase in 1 c.cm. of serum on 0·26 c.cm. of ethyl butyrate, after incubation at 37° C. for 24 hours; thymol blue being used as indicator.

Human sera	about 0·25
Rabbits' sera	,, 0·37
Guinea-pigs' sera	,, 1·20
Dogs' sera	,, 0·30
Cats' sera	,, 0·40

The remarkably high figure of the guinea-pig is interesting, and certain authors associate the high lipase with the high complement titre of the serum in this animal. We were unable to confirm this opinion, and found no strict parallel between the amount of lipase and the amount of complement present. Also, dialysing and heating experiments did not act in the same manner on the two substances, although we found that heated lipase was partially re-activated by the addition of a small quantity of complement, due allowance being made for the fresh lipase added with the complement. Post-mortem blood we have found to be unreliable, unless taken soon after death or unless the serum can be obtained where it has separated out free from the corpuscles. A certain amount of hæmoglobin does not interfere with the test except for the fact that it renders the reading of the end-point rather more difficult than when clear. Sera can be kept for months without a diminution in the lipase titre, and, as a matter of fact, it appears to be rather raised than lowered, especially with rabbit's serum.

During the acute stages of a filter-passer disease we anticipated a fall in the lipase content of the blood and a substantial rise later on, in the event of the patient making complete recovery. We have not been able to demonstrate with certainty any appreciable fall during the course of such diseases, but the rise in rabbits, when immunity has developed, was marked. A rise of more than double the normal figure has been found in several rabbits which had recovered from severe symptoms of encephalo-myelitis, and in four rabbits 10 to 14 days after inoculation on the skin with vaccinia virus. We have come to no conclusion as regards the length of time for which the lipase titre remains elevated, but probably it is not comparable to that of the immunity. So far, tests on the post-mortem blood of several dogs suffering during life from distemper have yielded nothing of note, but samples of blood from dogs which had recently recovered from the disease have, unfortunately, not been available.

Other Conditions Probably Caused by a Filter-Passing Virus.

For some time we have been carrying out experiments on lymphadenoma and allied diseases of man, and the more we studied this group of diseases the more did it appear to us possible that a filter-passing virus might be the primary ætiological factor. The reasons which led us to this conclusion cannot be discussed here, although it may be mentioned that in addition to the experimental anæmias which we have produced by the injection of a filter-passing virus, such diseases as leukæmia of fowls,[8] pernicious anæmia of horses,[9] &c., are known to be caused by this category of virus. As was expected, we found in lymphadenoma, myelocytic and lymphatic leukæmias, and pernicious anæmia an undoubted lowering in the lipase content of the blood. In a case of lymphadenoma the serum was once completely devoid of lipase, but the titre in this group of diseases usually ranged from about 0·1 to 0·15. Glycerinated extracts of liver, spleen, and lymphatic glands, obtained post mortem from blood disease cases, were also compared with extracts of normal organs; the results have not proved to be of much interest, although, up to the present, only a small number of tests have been performed. We were not surprised to find that the glycerine extracts of liver gave a high figure—viz., from 2 to 3; extracts of spleen and lymphatic glands being, relatively, poor in lipase. The glycerine extracts remain unaltered for a great length of time if stored in the cold.

Summary.

1. Spontaneous encephalo-myelitis and spontaneous nephritis of rabbits are caused by a single virus; almost certainly a filter-passer.

2. Death in these cases may be of either nervous or renal origin, although usually of renal origin.

3. In the former case nervous lesions predominate in the cerebral cortex and the mesencephalon, and there is usually a demonstrable mononucleosis of the cerebro-spinal fluid. There are no symptoms indicating disease of the nervous system.

4. In the latter case renal lesions predominate, but although there is an abundant desquamation of tubule cells, and passing of casts, hæmorrhage is absent. The blood-urea concentration is very high, while that of the urine is correspondingly low. Albumin is present in the urine. A remarkable feature is that there is no œdema of the subcutaneous tissues. The profound wasting in some cases suggests the possibility of a glycosuria, but tests for sugar were, unfortunately, omitted.

5. With the advent of symptoms, death in the spontaneous disease is almost invariably the rule; in the experimentally produced disease recovery is not infrequent.

6. Natural or cage infection is frequent, especially among young animals. Artificial inoculation often fails to lead to any symptoms, due possibly to a previous mild attack having produced a certain degree of immunity.

General Conclusions.

1. A fatal nephritis may result from the action of a filter-passing virus in the absence of any other variety of parasite.

2. Such a virus may cause death with urea retention, although the virus was obtained from diseased nervous tissue, and although the portal of entry was by the central nervous system.

3. Cage infection from animal to animal when the disease concerned is that from which the animal naturally suffers is frequent, but this is not so in the case of fomites to animal, nor is it so when a heterologous virus is used, although the animal may be susceptible to artificial inoculation of such a heterologous virus.

4. When an immunity to a filter-passer disease has become established the lipase content of the blood may be considerably increased; in many other diseases which excite a mononuclear activity, including blood diseases of doubtful ætiology, there is a lowering of the lipase content of the blood during the active stage of the disease.

5. Glycerine extracts of normal liver contain about ten times the quantity of lipase as compared with that of the blood serum or that of glycerine extracts of spleen or lymphatic glands.

References.

1. Bull. Jour. Exper. Med., 1917, xxv., 557.
2. Oliver: Jour. Infect. Diseases, 1922, xxx., 91.
3. Twort: Vet. Jour., 1922, lxxviii., 194.
4. Bell and Hurtzwell: Jour. Infect. Diseases, June, 1919, p. 628.
5. Archer: Researches in course of publication.
6. Twort and Archer: Vet. Jour., October, 1922.
7. Condrea: Comp. Rend. Soc. de Biol., 1922, lxxxvi., 15.
8. Ellermann: Hönse-Leukosen, Kobenhavns Universitet, September, 1920.
9. Carré et Vallée: Revue générale, 1906, viii., 593; 1907, ix., 113.

MEMORIAL TO LIEUT.-COLONEL EDWARD MANSEL-SYMPSON, M.D.—On May 20th, at a special service at St. Mary Magdalene's Church, Lincoln, two stained-glass windows, in memory of Edward Mansel-Sympson, were unveiled. The glass in the western window has been designed in allusion to Colonel Mansel-Sympson's professional career. The left-hand light embodies the figure of St. Luke, with pen and book, and the right-hand one the figure of St. Bartholomew, holding a knife, the instrument of his martyrdom. In a small pane above the lights is the staff of Æsculapius. The eastern window commemorates his antiquarian and literary interests.

Clinical and Laboratory Notes.

A CASE OF CEREBRAL ABSCESS IN A CHILD.

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THE following case is worthy of record for reasons given below:—

A girl, aged 4 years, was admitted under the care of one of us (J. P. P.) to the Queen's Hospital for Children on Feb. 24th, 1922. She was the last child of a healthy family of seven. The mother was healthy, but the father has paralysis of the legs and is losing his sight.

History.—The patient had measles 18 months previously, was stated to have had broncho-pneumonia 12 times, and had been ill since the last attack four months before. A month previous to admission she had a fit, followed by a second a few days later; a third occurred two days before admission and one on the day of admission. In these fits the left arm began with clonic contractions, then the leg and head twitched; this lasted about half an hour during which time consciousness was retained. After the fit the child complained of headache and said the left arm was weak. The nutrition of the muscles was normal, as also were the reflexes, except for an extensor plantar reflex on the left side. Bronchitic sounds were heard over both lungs, being much more numerous over the right lung. The heart and abdominal viscera appeared normal. There was no fever except for a slight rise early in March. The Wassermann reaction was negative.

Course of Case.—During the two months she was in hospital the patient had three more fits; on April 5th she was sent

Photograph of the child's brain, showing cavities of cerebral abscesses.

to the seaside branch hospital at Bexhill, being sent back on June 21st. Then a tender, fluctuating swelling was found on the right parietal bone, about half the size of a walnut. The fits recurred more frequently, and were Jacksonian in type, always commencing in the right arm; gait was unsteady and left leg weaker than right; knee-jerks could not be obtained, and abdominal reflexes were absent. Pupils were dilated and equal, and reacted to light and accommodation. There was well-marked optic neuritis. Lumbar puncture gave a clear fluid under slight pressure, normal on chemical and microscopic examination. There were occasional attacks of vomiting and complaints of headache. The lump on the head was aspirated, and a greenish pus evacuated, containing *Staphylococcus aureus*.

Operation.—On July 12th the skull was trephined. A large crescentic flap was turned down from the right fronto-parietal bone; the top of its curve reached the mid-line of the skull, where there was a small abscess which had previously been opened. On exploring the bone a minute sinus, lying about one inch to the right of the mid-line over the Rolandic fissure, tracked down through the bone. A half-inch trephine was applied behind this, and an oval area of normal bone 1¼ by 3 in. around the sinus was removed; the dura bulged strongly through the opening, and pulsation was barely perceptible. When the dura was opened the convolutions were found to be flattened and œdematous, but revealed no sign of inflammation. A small nick was then made in the dura where it had been adherent to the bone, and immediately a strong stream of greenish pus, about 3 oz., gushed out under considerable tension. The brain shrank like a deflated bag, and pulsation at once returned. A small drain was inserted and the wound closed, but marked collapse and respiratory distress followed and the child died a few hours afterwards.

Post Mortem.—There was a large abscess cavity in the pre- and post-Rolandic area of the right vertex, measuring 2 by 3 by 1¼ in. and half an inch below the cortex. Adjoining this on the mesial aspect of the brain was a smaller abscess cavity (see illustration). The walls were smooth and continuous with the brain substance. The rest of the brain was normal, except for a slight degree of internal hydrocephalus and some softening below the larger abscess. The lungs showed fibrosis of both apices, with doubtful signs of healed tubercle. The lungs were emphysematous, and there was pus in the larger and smaller bronchioles, but no bronchiectasis. *Staphylococcus aureus* was found in the pus from the brain and also from the bronchioles.

Remarks.

Abscess of the brain is exceedingly uncommon in so young a child; it is rarely seen under the age of 10 years. It is also uncommon for cerebral abscess to be secondary to lung disease, in spite of the fact that this cause is mentioned in all the text-books, and a priori one would expect to meet with it more frequently. Again, for a cerebral abscess to erode through the bone of the skull and form a tumour beneath the scalp is in our opinion an almost unique experience. It may be thought that this would not have occurred if the diagnosis had been made earlier, but at that time the only signs of cerebral disturbance were the Jacksonian fits. There was no optic neuritis, no vomiting, no headache except after a fit, and the child seemed quite well except for the signs of bronchitis. When the tumour first appeared it resembled a subperiosteal gumma, the edges being hard, while the centre fluctuated; this idea of a gumma was supported by the fact that the father was suffering from a syphilitic nerve lesion. The Wassermann reaction in the blood was negative, and the evacuated pus contained staphylococci. It was also peculiar that the abscess tracked directly through the bone to the exterior, without leaving any pus in the extradural space.

A CASE OF HYDATID DISEASE.

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THE following case is of interest owing to its unusual character.

The patient, a male, aged 50, formerly a collier, afterwards a weaver, and latterly a coal-heaver, was admitted to the Royal Infirmary, Blackburn, on Feb. 16th, 1923, for purposes of investigation, on account of having passed in the urine "a thick fleshy substance with a thin covering."

History of Present Condition.—Had no urinary symptoms previous to Feb. 10th, 1923. On this date he noticed slight pain and difficulty in micturating, and he passed the substance which is described in his own words above. He took it to his doctor, who thought that the substance in question might be an hydatid cyst. The patient states that he has lost weight considerably during the last few weeks, but can give no accurate figures.

Past History.—His left eye was destroyed by an accident in 1915. In July, 1922, he had an attack of pain in the lumbar region, probably a fibrositis, which lasted for three weeks. On Jan. 29th, 1923, he suffered from epigastric pain and constipation, which lasted for four days. With these exceptions he has had no illness or accident. Has never kept dogs or lived in a house in which they were kept. States that he has always been specially fond of watercress and has eaten largely of it since his boyhood.

Condition on Admission.—A moderately healthy-looking man of medium height and weight. Tongue coated. He is deaf in both ears and has a double set of artificial teeth. No abnormality found in heart or lungs. Systolic blood pressure 130, diastolic 80. Pupil reactions and eye movements in remaining eye normal, and knee-jerk present. On inspection, abdomen somewhat pendulous and distended, and lacks free movement on respiration. On palpation considerable gurgling, but no evidence of free fluid or of enlargement of liver or spleen. No abnormality can be discovered on bimanual examination of the kidneys. Percussion note over abdomen slightly tympanitic in character.

Examination of the blood shows the following: Hæmoglobin, 85 per cent.; reds, 4,680,000; colour index, 0·9; no nucleated reds seen, no stippling; no megalocytes, microcytes, or poikilocytes.

White cells 12,000. Percentages: polymorphonuclears, 90; eosinophils, 3; small mononuclears, 4; large mononuclears, 3; myelocytes, 0; transitional forms, 0.

Urine: Specific gravity 1014; reaction acid; no albumin; no sugar. An occasional granular cast was seen.

Urea-elimination test: before urea, 2·5 per cent.; first hour, 2·5 per cent.; second hour, 3·2 per cent.

Examination of the substance passed in the urine on Feb. 10th showed a thin-walled collapsed cyst of about the size of a walnut, and three fragments of a cyst or cysts, the latter slightly blood-stained. Typical hooklets were found on microscopical examination.

Subsequent History.—On Feb. 18th, two days after admission to hospital, one cyst of the size of a walnut, three smaller complete cysts, and several fragments were passed in the urine, and hooklets were again found. On the 27th a cystoscopical examination was carried out, and no abnormality was discovered. This finding is not conclusive, since a thin-walled and freely movable cyst might evade the observation of the cystoscopist.

The passing of hydatid cysts per urethram is a rare occurrence. Osler records two cases out of a series of 241 cases of hydatid disease. In the present case it seems probable that the disease is localised in the kidney, and it is not proposed to adopt any active treatment unless other symptoms and signs appear.

A CASE OF
COMPLETE INVERSION OF THE UTERUS
OCCURRING IMMEDIATELY AFTER LABOUR.

BY H. COHEN, M.R.C.S. ENG.

THE following case presents points of interest.

The patient was a primigravida, aged 20, with half an inch shortening of the diagonal conjugate. Labour commenced at 10 P.M. on Dec. 19th, 1922. At 5.30 next morning, when she was first seen, the pains were regular and moderately strong, the os three-quarters dilated, the cervix dilatable, and the membranes unruptured, the presentation being L.O.P. After an hour the membranes were ruptured, but at 7.15 A.M., as the pains were becoming perceptibly weaker and as the head was not rotating, I sent for my colleague, Dr. B. J. B. Devine, who administered chloroform. The head was rotated, forceps applied, and the patient delivered in Walcher's position without a tear. Half an hour later the placenta was felt bulging the lower uterine segment, and the uterus being well contracted, the placenta was readily expressed. It was at once evident that complete inversion had taken place. The membranes were adherent to the fundus and were detached. Meanwhile the patient was still under the influence of the anæsthetic which was continued. A hot sterile cloth was applied to the exposed endometrium. There was practically no hæmorrhage, and after an interval, the patient's condition being good, the inversion was slowly reduced. Pituitrin (1 c.cm.) was injected and finally a hot intra-uterine douche given.

The uterus was kept under control for two hours, and very little bleeding occurred, though collapse of moderate degree was present. Pulse 120, but regular and of fair volume. During the following week the patient was kept under careful observation, rectal saline being given twice daily. There was a reactionary rise of temperature (101° F.) during the first 24 hours, but subsequently during the whole course of the puerperium the temperature did not vary from the normal by more than 1·5°, finally settling down to normal on the fifteenth day. Otherwise recovery was uneventful, the patient being kept in the recumbent position for a month.

My thanks are due to my colleague, Dr. Devine, for his advice and assistance in the course of the case.

Nottingham.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION FOR THE STUDY OF DISEASE IN CHILDREN.

BIRTH PALSIES.

AT a meeting of this section on May 25th, with Dr. ERIC PRITCHARD, the President, in the chair, there was an exhibition of cases and discussion on birth palsies.

Klumpke's Paralysis.

Dr. C. WORSTER-DROUGHT showed a female child, now aged 2 years, who when first seen in July, 1921, presented a complete flaccid paralysis of the right arm; all the muscles, including the deltoid and pectoralis major, were then involved, but not the scapular muscles. She was a full-term first child, a breech presentation, and it was stated that she had been born with the arms extended. None of the paralysed muscles reacted to faradism, but to galvanism there was some response in all the muscles except the intrinsic muscles of the hand. The child did not appear to feel pin-pricks below the elbow or on the inner side of the upper arm. It was evident that all the cords of the brachial plexus had been damaged by upward traction of the arm at birth, and the inner cord had suffered most. Under treatment by splintage (with the upper arm abducted to a right angle and the forearm supinated and flexed) with massage and galvanic baths gradual improvement had taken place. Voluntary movement appeared first in the extensors of the first and second fingers, and by March, 1922, all the muscles above the elbow reacted to faradism. At the present time the only muscles which remained paralysed were the intrinsics of the hand; but the flexors of the wrist and fingers were still weak and there was no hand-grip. The attitude of the arm was that of external rotation and hyperpronation. Sensation was impaired on the inner side of the hand and forearm. It was apparent that all the roots had recovered except the eighth cervical (flexors of wrist and fingers) and first dorsal nerves (intrinsic muscles of hand). Dr. Worster-Drought pointed out that this form of birth paralysis, the Klumpke or lower arm type, was comparatively rare, over 80 per cent. of brachial birth palsies being of the Erb-Duchenne or upper arm type. According to Sherren recovery was rarely complete if there had been no improvement up to the age of 3 months. Dr. Worster-Drought asked for opinions as to the advisability or otherwise of exploring the brachial plexus.

Mr. GEORGE PERKINS showed the following two cases, both of which had been operated upon by Mr. W. R. Bristow, under whose care they were at St. Thomas's Hospital.

Erb-Duchenne Paralysis.

E. W., aged 7, was first seen in February, 1921. The right shoulder was then abducted and the forearm pronated. Abduction and external rotation of the shoulder and supination of the forearm were impossible either actively or passively, although faradic response was normal in all muscles. In May, 1921, the subscapularis tendon was divided through an open incision and the arm put up in plaster so that the fixed deformity was corrected. The splint remained on for a year, and he had since had physical treatment. The present state was as follows: Shoulder: abduction; full passive and half active range possible; external rotation; half passive range possible, but no active power. Elbow: full active and passive flexion present. Forearm: supination; half active and full passive range of movement present. All muscles were active and the joints normal. The result was, therefore, a very useful arm.

Spastic Hemiplegia.

I the second case there was a history of weakness of the right arm and leg from infancy, although there was no history of a difficult labour, and there was consequently some doubt as to whether or not the case was one of true birth palsy. This case, a girl aged 10, was first seen in January, 1921, when she exhibited a right-sided hemiplegia, the right foot being in fixed equinus and the right forearm in fixed pronation with the wrist in fixed flexion. In January, 1921, Stoffel's operation was performed on the right internal popliteal nerve; the two branches to the heads of the gastrocnemii and half the supply to the soleus muscle were divided. In March, 1921, Stoffel's operation was performed in the arm, the nerves supplying the flexor carpi radialis and the pronator radii teres being divided. Her present state was such that she could walk almost normally, but while there was a full passive range of movement in all the joints of the arm the range of active movement was less and there was marked muscular incoördination and athetosis. Mr. Perkins remarked that the difference in results in the arm and leg was largely due to the difficulty in persuading the child to make use of a hand which up till the time of operation had been useless, whereas the child, if it walked at all, must use and develop full function in the leg that had been operated on.

Dr. BERNARD MYERS commented on the wonderful results obtained by orthopædic surgery in cases of spastic paraplegia, and quoted as an instance the case of a child, aged 7, with scissor-leg deformity, who after several operations by Sir Robert Jones could now walk, run, and even jump. He also described a case of spastic hemiplegia in a new-born child, which died very soon after birth after exhibiting intermittent apnœa of the inspiratory type. At the post-mortem examination punctiform hæmorrhages were found in the cerebral cortex visible to the naked eye. Hæmorrhage into the pneumotaxic centre in the lower pons was found microscopically, although not visible to the naked eye. He believed that such microscopic hæmorrhages might be quite common, and that their occurrence might explain the apparent absence of cause for cerebral birth palsies when the person who conducted the post-mortem examination was content with examination by the naked eye alone.

Statistics from L.C.C. Schools.

Dr. F. C. SHRUBSALL gave some figures regarding the presence of difficult labour and asphyxia at birth of cases of infantile hemiplegia and diplegia at the London County Council special schools. The history of 146 cases had been investigated; in 32 cases there was a history of difficult labour, in 11 cases there was a history of asphyxia in the child, and in the remaining cases there was no history of either. These figures corresponded fairly accurately with the percentages of difficult labour and of asphyxia in the histories of children taken at random in the same schools. As regards their mental condition, which was regarded as important from the point of view of treatment, cases of hemiplegia were of average or better than average mentality in 41 per cent. of cases, and below average or "borderline" in 59 per cent., while cases of diplegia were of average mentality in 15 per cent., and below average or "borderline" in the remaining 85 per cent. of cases.

Mr. MAX PAGE contrasted the conditions under which the upper and lower limbs normally functioned; this explained the comparative lack of success in operations on the upper limb. Operative interference in the upper limb was only useful for the reposition of joints, and was useless as a means of restoring the finer movements. In the lower limb, however, Stoffel's operation was very valuable, as the movements were coarse and almost automatic.

Dr. E. BELLINGHAM SMITH questioned whether injury at birth was the cause of all the so-called "birth palsies." He pointed out that precisely similar conditions might be produced by polioencephalitis during infancy. Parents were apt to remember non-existent birth injuries if these were suggested as a cause of paralysis. The number of Dr. Shrubsall's cases in which there was no history of birth injury or of asphyxia tended to strengthen his view that many of these cases were in fact cases of polioencephalitis. He suggested that Mr. Perkins's second case was also one of polioencephalitis.

Dr. WORSTER-DROUGHT agreed as to the difficulty of diagnosis. In addition to polioencephalitis congenital syphilis had to be considered.

Mr. PERKINS pointed out that the mentality of the patient had little bearing upon the success of operation on the legs; even an idiot could walk and any case of diplegia could be made to do so by means of Stoffel's operation. Whatever their ætiology the orthopædic surgeon grouped these cases as "cerebral spastic paralysis," in which the upper motor neurone had lost its normal power of controlling muscular balance. As a result the stronger group of muscles in a limb overcame the weaker, thus producing a deformity which in time became fixed. The orthopædic surgeon's aim was to restore muscular balance by cutting off a part of the nerve-supply to the stronger muscles.

SECTION OF EPIDEMIOLOGY AND STATE MEDICINE.

THE MORTALITY OF COAL AND METALLIFEROUS MINERS.

A MEETING of this section was held on May 25th Dr. R. J. REECE, the President, being in the chair.

Prof. E. L. COLLIS read a paper entitled An Inquiry into the Mortality of Coal and Metalliferous Miners in England and Wales. He remarked that the mining community consisted for the most part of a compact body of men who did not change their occupation, were employed underground in dimly illuminated and artificially ventilated workings, had to put forth considerable muscular energy, and were exposed to the dust of the materials worked. Notwithstanding a general similarity of working conditions, the rates of mortality of different groups of miners differed widely. In coal-mining, pneumonia, bronchitis, and accidents were responsible for rates of mortality considerably above the standard of all occupied males, diseases attributed to alcoholism and phthisis were, on the other hand, less deadly amongst coal-miners than in the standard population. When the separate coal-fields were considered it appeared that the rate of mortality in the Lancashire field much exceeded that in any other and was nearly double the rate of Nottinghamshire coal-miners. It would seem that although local conditions must be held to contribute something to the differences, inquiry within the industry was needed to ascertain why they were so accentuated, particularly perhaps in the instance of phthisis.

The age distribution of phthisis amongst coal-miners brought it into line with the type affecting workers exposed to silica dust, but the unusually low absolute prevalence of the disease needed explanation. Possibly Mavrogordato's work provided the clue; he exposed one group of guinea-pigs to silica dust alone, a second to silica dust *followed* by coal, and a third to silica dust *preceded* by coal. His results indicated that "once silica is fixed in the lung tissues, coal exerts no eliminative effect. If anything the influence is in an opposite direction, but that a prior or even simultaneous exposure to coal dust appears to set up a condition in the lung which is inimical to the fixation of silica." With regard to mortality attributable to alcoholism, the order of the fields did not correspond to their order in respect of other causes of death. The miner was a "convivial" rather than an "industrial" drinker, usually taking no alcohol until the day's work was over. There appeared to be a relation between the depth of working and the mortality from alcohol,

Bearing in mind the strenuous nature of the task and the heat of the workings, it might be that the provision of drinking water underground would appreciably lessen the convivial drinking amongst coal-miners. Cancer was not an exceptionally important cause of mortality amongst coal-miners, cancer of the stomach and liver was the only form which showed a rate appreciably above that of the standard.

Passing to the three forms of metalliferous mining, (1) Tin-mining, (2) lead-mining, (3) ironstone-mining, it was remarked that the two former stood out because not only was the general rate of mortality in each excessive, but in each the same groups of disease were prominent—viz., phthisis with respiratory diseases and Bright's disease. Veins of tin ore—which in this country occurred exclusively in Cornwall—not only contained quartz but lay in a rock largely made up of quartz; much dust was generated in the workings. The high rate and age distribution of phthisis were in accord with what was recognised to occur amongst men exposed to the dust of silica. Recent work by W. E. Gye, W. J. Purdy, and E. H. Kettle on the toxicity of colloidal silica lent interest to the somewhat high rates for Bright's disease. The conclusion suggested was that silica dust was gradually converted into soluble silica in the lungs and caused the well-known fibrotic changes, but some escaped into the blood to be excreted by the kidneys which were consequently similarly affected. Lead ore was found in different districts; at Greenside, where the veins occurred in a granite country rock, the phthisis mortality was excessive, but not at Keswick, where the ore occurred in a limestone rock. Phthisis among hæmatite miners appeared statistically to resemble in a modified way fibroid phthisis and might be due to oxide of iron. Other workers, such as boiler-makers, exposed to oxide of iron exhibited a similar statistical type. This distribution was not found in carbonate of iron miners. Alumina dust, judging from the mortality data for slate quarriers, resembled oxide of iron and silica in its effect on the lungs.

A point mentioned in connexion with the possible influence of coal dust in lowering the incidence of phthisis upon coal-miners was supported by certain facts from the ganister industry. Ganister was a quartzite rock found underlying coal and overlying fire clay. Best ganister, which contained over 95 per cent. of quartzite, was made into first-grade refractory bricks and other material used for lining steel furnaces. The dust to which the workers were exposed was nearly pure silica and their mortality from phthisis excessive. Impure ganister, which contained veins of fire clay, was made into second-grade refractory materials used for coke ovens. The dust contained about 80 per cent. pure silica, but the workers had no excessive mortality from phthisis. The theory had been put forward that the influence of coal was due to some organic substance and that this substance might be washed down from the coal into the underlying fire clay where it was retained, this accounting for the protective action of the fire clay; it might be that the substance was of a nature to prevent silica becoming colloidal. An interesting point in connexion with tuberculous silicosis, first noted amongst metalliferous miners, was its low power of infecting contacts not themselves exposed to silica dust, such as the wives and children of the miners.

Discussion.

The PRESIDENT remarked that one factor of the low mortality from phthisis of coal-miners might be their comparatively high standard of diet. Dr. R. J. Ewart—whose untimely death they all deplored—had called attention to the correspondence between the rising curve of food consumption and the decline of phthisis; it would be of interest to learn whether the Lancashire field where, from the tables shown, it seemed that the phthisis rate had varied little of recent years, differed in the matter of food consumption from the other fields.

Sir KENNETH GOADBY spoke of the high sickness rate experienced by miners.

Dr. J. BROWNLEE fully concurred with the reader of the paper in emphasising the chemical as opposed to the crudely physical theory of the mode of action of silica.

Dr. M. GREENWOOD wished to associate himself with the President in calling attention to the loss epidemiological science had sustained by the death of Dr. Ewart, a most brilliant and original-minded investigator.

Dr. D. MCKAIL referred to the difficulty of interpreting accident statistics, and Dr. J. C. MCVAIL urged the importance of making fuller use of the morbidity data in process of collection under the National Health Insurance rules.

Prof. COLLIS, in reply, paid a tribute to the work of Dr. Ewart, the news of whose death had saddened a pleasant evening.

SECTION OF OTOLOGY.

A MEETING of the section was held on May 18th, under the presidency of Sir CHARLES A. BALLANCE.

An Instrument for Assisting the Deaf.

Mr. RICHARD LAKE and Mr. W. M. MOLLISON exhibited and demonstrated an instrument with this object, produced by the Marconi Research Department, which was favourably commented on by the President. The improvement shown by this instrument on previous attempts was due to the developments in the amplification of sound by means of electrical circuits, such as those used in wireless telephony, having enabled the problem to be approached from a new angle. This apparatus is known as the Marconi Otophone, and consists of electrical amplifying circuits in a cabinet, to which are connected a sensitive microphone and a pair of head telephones. By the use of a long flexible cord, the cabinet and microphone can be stationary while the patient is free to move about. The total weight is 16 lb., and the current is derived from dry batteries inside the instrument. Three switches enable the amount of current supplied to the valves to be regulated, and the speech amplification can be adjusted to five degrees. The object of the instrument, it was explained, was not to give a very powerful effect on the ears of a deaf person, but to enable a deaf person to hear an ordinary conversation in a room. It is claimed that by it a conversation at a distance of 6 feet is clearly reproduced. It is proposed to supply the instrument only on medical recommendation.

Mr. Mollison said he did not know whether the instrument would be of benefit to cases of internal-ear deafness, or only for otosclerosis and middle-ear deafness.

The PRESIDENT thought the instrument was a remarkable one, and that it would be much improved, chiefly in regard to weight and the cutting out of extraneous sounds.

Cases and Specimens.

Among the cases and specimens shown were two by Mr. F. SYDENHAM and Dr. DAN MCKENZIE. The first was a girl, aged 16, who suffered from epidemic cerebro-spinal fever with acute suppuration of the middle ear. When admitted to hospital 14 months ago the girl was semi-comatose and apparently quite deaf. The temperature was 103·5° F., there was a discharge from both ears, pain in both mastoids, and œdema on one side. A double Heath operation revealed only a little pus, nothing sufficient to account for the grave symptoms. A good recovery was made, but the deafness persisted. Tuning-forks were heard for only a few seconds by air and bone. The caloric tests were negative. The meningeal infection was considered to be due to that of the middle ear. The second case was one in which a woman, aged 35, had a temporo-sphenoidal abscess successfully evacuated six years ago. The abscess was a chronic one, with thick walls, and the first serious seizure occurred a

year after the operation. Recently these were becoming more frequent. Dr. C. O. Hawthorne regarded the seizures as probably epileptic.

Dr. MCKENZIE related the case of a boy, aged 8, who was the subject of otitic pterygo-maxillary abscess which had been induced by thrombo-phlebitis of the jugular bulb. His temperature, 102°F., was not lowered by an immediate radical mastoid operation. On reopening the wound two days later, a small amount of pus led to an abscess in front of the bony meatus. This was opened and drained and the lateral sinus explored, but the latter contained no clot. As the temperature still remained high, Dr. McKenzie exposed and resected the internal jugular vein; it was found to be thrombosed down to the lower border of the thyroid cartilage. Next day there were signs of cavernous sinus thrombosis, followed in two days by death. The course of the infection in this case was rare.

Mr. T. H. JUST showed a woman, aged 27, who had a brain abscess due to otitic infection, also a right temporo-sphenoidal abscess, which latter was not revealed by clinical signs. She had had otorrhœa and deafness on the right side since childhood, but no other symptoms until shortly before admission to hospital last year. She then suffered from headache and vomiting. Her temperature was 101·2° F., pulse 120, and she kept her neck rigid. A radical mastoid on the right side was done, and the mastoid was found to be acellular, but the roof of the antrum was carious and an extradural abscess was found just above the tegmen. In the exposed dura mater a sinus was found leading to an abscess in the brain. This was opened and drained by tubes, and a slow and uneventful recovery ensued.

Mr. SYDNEY SCOTT described an interesting case of a girl, aged 10, whose left temporo-sphenoidal abscess was finally diagnosed owing to the definite and persistent amnesia for names and objects. On draining this, the general condition, temperament, and memory rapidly improved. Now the child was very bright and quite well 18 months after the operation.

Mr. Scott also described in detail two cases of cerebellar abscess in patients aged respectively 17 and 7, one of whom was still in hospital, the other quite recovered.

Mr. MOLLISON showed a man, aged 42, whose vertigo was cured by opening the external semicircular canal. The man's succession of attacks of giddiness and vertigo commenced while he was driving a van. There seemed to be normal membranes in both ears, but he was practically deaf in the left. Caloric response was sluggish, especially on the left. The left semicircular canal was opened, and within four weeks of the operation the patient was free from vertigo and he could hear a whisper at 8 feet from the left ear.

The cases were fully discussed.

CARDIFF MEDICAL SOCIETY.

A MEETING of this Society was held on May 8th, Prof. E. J. MACLEAN, the President, being in the chair.

Dr. R. CAMERON read a paper on

Renal Inefficiency and its Clinical Detection.

He limited the scope of the subject to the inefficiency associated with chronic nephritis, into the pathological and clinical classification of which he entered in some detail. Discussing the diagnosis of chronic nephritis, he pointed out the necessity for investigating (1) the presence, severity, and progress of general clinical signs; (2) renal symptoms—dropsy, uræmia; (3) cardio-vascular symptoms; (4) examination of the urine; (5) certain renal efficiency tests. The general clinical symptoms to be noted were weakness, loss of flesh—which might be masked by œdema—severe headaches, vomiting, and gastro-intestinal symptoms, recurring attacks of bronchitis and œdema of the lungs, with shortness of breath. In addition there might be added symptoms indicative of kidney mischief—e.g., dropsy, uræmia, and cardio-vascular changes.

Dropsy was a diagnostic feature in one form of chronic nephritis, absent in others. Its causation was not fully defined. It had been ascribed to defective glomerular activity, to hydræmia, to damage of capillary endothelium by retained poisons, and to acidæmia rendering the vessels unduly permeable. Retention of salt and depletion of proteins were now considered the deciding factors. Defective blood protein might be a contributory cause of dropsy. In chronic parenchymatous nephritis the daily drain of protein in the urine might be 10 per cent. of the total blood protein. Addition of protein to the diet where there was dropsy reduced the dropsy, presumably because it raised the osmotic pressure of the blood in opposition to the controlling osmotic pressure of the tissues. Perfusion experiments with Ringer's solution sometimes caused œdema, and this œdema was prevented by the addition of colloids to the fluid.

Uræmia was a name given to a group of symptoms affecting the central nervous, the respiratory, and the gastro-intestinal systems. It was only found associated with renal inefficiency, and its recognition was therefore important. It had been called the metabolic catastrophe of renal disease, and in chronic nephritis it appeared only when the huge reserve of secreting tubules and glomeruli had dwindled till the critical minimum point had been passed. The cerebral or nervous type of uræmia might show drowsiness leading to coma, or muscular twitchings or spasms leading to convulsions. Sudden mania occasionally occurred, but delusions were common. Hemiplegia, or monoplegia, or amaurosis also occurred. Minor manifestations were headache, insomnia, muscular cramps, itching, numbness, or tingling. In the respiratory type, paroxysmal dyspnœa—so-called uræmic asthma—was a frequent symptom, and sometimes the first symptom observed of chronic nephritis. It was apt to begin in the early morning, recurring regularly at that time and leaving the patient free during the day. Later, it might last throughout the 24 hours. It was distinguishable from the wheezy respiration of bronchial asthma and from the air-hunger of diabetes by a peculiar whistling or hissing sound. Cheyne-Stokes breathing was often a well-defined feature at a later stage. In the gastro-intestinal type the patient might exhibit persistent hiccough, nausea, vomiting of an uncontrollable nature, and choleraic diarrhœa. Uræmia was simulated by many other conditions, notably alcohol and opium poisoning, diabetes, epilepsy, and the onset of general paralysis, cerebral hæmorrhage, tumour, and meningitis. The history and concomitant symptoms helped in the diagnosis, but the blood-urea and urea-concentration tests were of most service.

Cardio-vascular changes were frequently the first signs to draw attention to the nephritic condition. Distinctive symptoms were shortness of breath and giddiness on rising, epistaxis, persistent headache, and insomnia. These led to detection of high blood pressure, arterio-sclerosis, and cardiac hypertrophy. The blood pressure might be 160–200 systolic and 110 diastolic. High blood pressure was, therefore, an important index both in diagnosis and prognosis, but was sometimes present where renal tests gave no indication of nephritis. Even here prognosis must be guarded, on account of a possible cerebral hæmorrhage. *Retinitis* was present in 15 to 20 per cent. of cases, was of serious prognostic significance, but not invariably a sign of imminent danger. An important new field of investigation had been opened up by the introduction of certain chemical tests—chiefly the diastase test, the blood-urea test, and the urea-concentration factor. Generally the urea-concentration factor was a check on the blood-urea, for if the latter was high the amount of urea passed should be high, and gradually increase above 1·5 to 2·5.

Treatment.—As to diet, a diseased organ should not be overworked. It might rather be said, "Do not give it the work it cannot do." In renal disease we had been taught to deny almost entirely protein food, since the kidneys were the organs chiefly responsible for nitrogenous excretion. In acute nephritis, where the functions were almost universally suspended for a limited period, it was reasonable to carry out the rule. In the chronic interstitial kidney—the azotæmic type—the kidney could excrete its nitrogen so long as not more than 94 g. of protein was taken per day. Chittenden, the apostle of nitrogenous economy, said that 60 g. is necessary to maintain nutrition. Therefore at least 60 g. should be taken, allowing a balance of 34 g. If 60 g. were not taken in the food, a large part of this would be sent to the kidney in any case from endogenous metabolism. If the urea-concentration test showed above 1·5, much more could be taken. 62 g. would allow one egg, ¼ lb. fish, and 2 oz. of meat, and bread and vegetables would bring it up to 94 g. In the hydræmic type alone large quantities of protein could be given, as it lessened the dropsy and altered the whole outlook in life for the patient, who had hitherto been starved to no purpose. On the other hand, in a dropsical patient, who also showed signs of uræmia, it was safer to have a urea-concentration test done repeatedly before loading his blood with amino-acids, the precursors of nitrogenous waste. A certain amount of protein he should have to replace tissue waste, but not too much to overtax his renal power. It was Epstein who suggested protein feeding for dropsy, and experience proved that it was a great help. Epstein's theory that dropsy is partly the result of deficient blood proteins was not, however, generally accepted, and H. Maclean had worked out tables showing that, concurrently with the disappearance of the dropsy and the feeding with protein, the blood proteins—albumin and globulin—were not always increased, though the blood-urea was. Hence it was possible that urea was the cause of the increased diuresis and removal of symptoms.

Mr. D. J. HARRIES showed a

Large Cavernous Angioma of the Face

in a man aged 24. It was present at birth, and had gradually got bigger. It now occupied an area corresponding to the sensory distribution of the third division of the fifth nerve on the left side. It involved the whole thickness of the left cheek below the level of the angle of the mouth, the left lower lip, and the anterior two-thirds of the left half of the tongue, and there was an offshoot running upwards in front of the ear to the level of the upper border of the pinna. On April 6th, 1923, the left external carotid and all the veins running down from the left side of the face were ligatured. On April 20th the opposite side was similarly treated. This had reduced the mass to about two-thirds of its original size. Mr. Harries hoped to show the case again, after trying the effects of electrolysis. The case was interesting in that it suggested that the growth of the angioma was controlled by the sensory branches of the third division of the fifth nerve. Its extent could not be explained in terms of vascular or vaso-motor distribution.

ERRATUM.—In the last issue of THE LANCET (p. 1057) it was stated that at the Medico-Legal Society on May 15th the chair was taken by *Dr. M. A.* Collins. The name should, of course, have been *Sir William J.* Collins.

NORTH-WESTERN TUBERCULOSIS SOCIETY.—A meeting will be held at 3 P.M. on June 7th at the Tuberculosis Offices, Joddrell-street, off Hardman-street, Deansgate, Manchester, when Dr. H. de Carle Woodcock, of Leeds, will read a paper on the Diagnosis and Treatment of Tuberculous Glands. Medical practitioners interested in the subject are invited to attend.

Reviews and Notices of Books.

MEMOIRS: WITH A FULL ACCOUNT OF THE GREAT MALARIA PROBLEM AND ITS SOLUTION.

By Colonel Sir RONALD ROSS, K.C.B., F.R.S. London: John Murray. 1923. Pp. 547. 24*s*.

SOME 20 years ago Sir Ronald Ross proposed to himself to tell the story of the solution of the malaria problem, because the facts when disclosed would reveal one of the most dramatic episodes in the history of medicine. But professional and professorial duties, no less than numerous malaria expeditions, the writing of a text-book on the prevention of malaria, and, lastly, duties and responsibilities in connexion with the war, regularly interfered with his project. The book, as completed, has taken a different plan from that originally designed; it is addressed now to the general reader in the form of memoirs, in whose compilation we learn that the author has seldom trusted to memory alone, but has verified most of the details from documents. He admits that these were "generally scribbled in the heat of action," but though this may imply haste it implies also the virtues of a record made before forgetfulness could intervene. A more critical attitude might have been adopted, he allows, but he has preferred to leave what he holds as facts to speak for themselves, praying that the book will have something more than its medical interests to hold the reader.

The work is long and begins with the pedigree of its author upon the inference of descent from the last Earl of Ross, who was killed in the fourteenth century. In nearer times the interesting line is traced back on the male and female side through several generations of soldiers and Indian officers. The author's grandfather was Lieutenant-Colonel Hugh Ross, who died comparatively young at Cawnpore in 1838; his father, Sir Campbell Ross, K.C.B., was a distinguished Indian soldier, and his mother, Matilda Charlotte Elderton, was the daughter of a lawyer and landowner in London by his first wife Matilda Halford, this lady, on the face of it, having been connected with the ancient Halford family whose property passed in the reign of George IV. to Dr. Henry Vaughan—later well known, under the style of Sir Henry Halford, as President of the Royal College of Physicians of London. Sir Ronald Ross describes his father as a typical soldier, straight, stern, downright, and experienced; he was also an expert artist in water-colours. He married while home on furlough, and the author of the Memoirs, the eldest of his ten children, was born in India, in May, 1857, three days after the Indian Mutiny broke out.

At the age of eight Ronald Ross was sent to his uncle in the Isle of Wight for health and education, and for five years was at a boarding school near Southampton, where his chief progress, we learn, was made in geometry and drawing, though he was much interested in music and worked out for himself the laws of harmony, so that he was soon able to harmonise any melody in any key. In 1873 he was first in all England for drawing at the Oxford and Cambridge Local Examination. These early inclinations towards mathematics and art have remained throughout the author's life, so that in the preface of this book we find his malaria work described as an episode, or self-imposed duty, secondary in relation to the many ambitions with which he started, and which he has always cherished. He elected to study medicine, and at the age of 17 was entered as a student at St. Bartholomew's Hospital. Here he was much attracted by physiology and the revelations of the microscope, continued his musical studies with enthusiasm, read an imposing amount of poetry, and decided that he would himself take seriously to verse, as well, apparently, as try his hand at sculpture. But Sir Campbell Ross indicated that it was time for him to get qualified, and in 1881, armed with the necessary diplomas, he

passed into the Indian Medical Service and departed for India. His descriptions of life in Madras, Burma, Bangalore, and other centres close the first part of the Memoirs with a vivid picture of service in India, and all this section is full of reference to writing in prose and poetry at which he enthusiastically toiled, and which resulted in the publication of two dramas in verse and a romance, which won approbation from well-known writers, but which earned no money.

The second section of the book deals with the subject of malaria, and sets out the problem, the experiments, their failures and successes, the circumstances of the discovery and of its proof, and Sir Ronald Ross has been at considerable pains to make a complicated and interesting story clear to the general public whom he is addressing. His labours were unavoidably, and perhaps avoidably, interrupted by official duties and other circumstances, and considering the length of time which the investigations lasted it was impossible that misinterpretation and misunderstanding should not sometimes occur, but the verdict on the supreme value of Sir Ronald Ross's work has never been challenged, and the honours and awards which he has received, as recorded in one of the appendices, make a list of which any man might be proud. It is impossible, therefore, not to regret some of the passages in this and in the third section of the book, but none the less we have here pregnant lessons for the public. Once again a great scientific research is shown to have succeeded in face of public apathy, the protagonists are found to receive little material support, and the wide economic bearing of the discovery, as influencing for the better the death-rates and life conditions of millions of people, goes largely unobserved at first.

Throughout all his assiduity at the special work which has won him world fame Sir Ronald Ross pursued his experiments in mathematics and his ideals in verse. He gives many excerpts from his poems and a catalogue of his mathematical papers in an appendix. And how devoted he has been to both pursuits is instanced by a phrase in the preface, already quoted, in which the study of malaria figures almost as a by-industry. The need to find the right word entailed by the mechanics of prosody must, however, have served Sir Ronald Ross well in scientific writing, while his mathematical studies had a definite outlet in his studies of pathometry.

The book is thoroughly well produced, and should obtain a gratifying reception from the public.

PSYCHOLOGY AND PSYCHOTHERAPY.

Some Applications of Psycho-analysis. By Dr. OSKAR PFISTER, Pastor in Zurich, Switzerland. London: George Allen and Unwin. 1923. Pp. 352. 16*s.*

THIS is a collection of essays on varied aspects of psycho-analysis. Opening his subject with apologetics Dr. Pfister claims for it a place in science and demonstrates that it can fill up the "enormous gaps" in orthodox psychology. The essays are uneven; that on the Psychology of Peace and War is inconclusive and drifts into simple eloquence which may have psychological value but is not psychology. In Psycho-analysis and Art the author, after the analysis of a neurotic artist and his pictures, deduces that the work of art has a double meaning; the latent meaning, often not recognised by the conscious mind of the artist, is yet his property, whilst the manifest meaning is accessible to others. In the chapter on philosophy Pfister departs from the empiricism of Freud and ventures into metaphysics. The relation of psycho-analysis to ethics he claims to be a constructive one and the chapter can be recommended to those who fear a destructive influence. Pfister's special work is among adolescents, and his description of the treatment of their psycho-neurotic manifestations brings up the question, which he has more definitely raised in other writings, whether this treatment shall be a part of medicine or of pedagogy.

The translation runs smoothly, but occasionally a strange statement (as, on p. 96, that the existence of love and hatred is a rationalisation) makes one suspect a translator's error. Dr. Pfister writes as a broad-minded Protestant pastor and his views are on the whole expressive of psycho-analytical orthodoxy; there are probably many people to whom such a combination should make a special appeal.

Group Psychology and the Analysis of the Ego. By SIGM. FREUD, M.D., LL.D. Authorised translation by JAMES STRACHEY. London: George Allen and Unwin. 1922. Pp. 134. 7*s.* 6*d.*

HERE Freud examines the conceptions of Trotter and McDougall, and of Le Bon in his "Psychologie des Foules," in the light of psycho-analytical theory. The herd instinct is postulated by Trotter as one of the primary instincts, and man's collective action, with its intensification of the emotions and inhibition of the intellect, differs so much from his actions as an individual that this postulate has been generally accepted. Freud, however, analyses the instinct into elements which are constituents of individual psychology, identification with other members of the herd and recognition of the leader as the dreaded primal father being the main elements. Suggestion, or suggestibility, which to some psychologists is an irreducible primary phenomenon akin to the herd instinct, is similarly resolved, and Freud defines suggestion as "a conviction which is not based upon perception and reasoning but upon an erotic tie." This expresses the well-known psycho-analytic view, but the analysis of the herd instinct is novel. A great part of Trotter's argument is based upon the existence of the instinct in lower animals, which Freud neither denies nor attempts to explain. To English psychologists this will appear as a serious omission in what is an important contribution to social psychology.

Beyond the Pleasure Principle. By SIGM. FREUD. Authorised translation by C. J. M. HUBBACK. London: George Allen and Unwin. 1922. Pp. 90. 6*s.*

IN this book Freud pursues a speculative path into what he calls meta-psychology and reaches the thought that the pleasure principle ultimately tends to keep the psychic apparatus free from excitation and thus subserves the death instinct. His thesis is frankly an intellectual exercise and is not easy to follow. He reflects (p. 76), "I might be asked whether I am myself convinced of the views here set forward, and if so, how far. My answer would be that I am neither convinced myself, nor am I seeking to arouse conviction in others." The book is addressed only to those fully acquainted with psycho-analytic theory.

L'OPOTHÉRAPIE DU PRATICIEN.

By L. LEMATTE, Docteur en Pharmacie; Membre de la Société de Médecine de Paris et de la Société de Thérapeutique. Paris: A. Maloine et Fils. 1923. Pp. 235. Fr.5.

THIS little volume is intended as a guide to the practitioner in the uses of the various organotherapeutic preparations. Dr. Lematte is not an advocate of the administration of dried extracts except in the case of thyroid and parathyroid glands. He prefers glycerine extracts given hypodermically, for he considers that by this method only can the active principle of the gland be retained and the full physiological effect secured. A good deal of space is devoted to a description of the methods employed in preparing standardised liquid glandular products and the precautions necessary to ensure sterile extracts. The various uses to which these extracts are put are detailed and in each case authority is quoted for the recommendation. The author appears to have ample faith in the value of gland extracts in the treatment of various disorders.

PRACTICAL MORBID HISTOLOGY.

A Handbook for the Use of Students and Practitioners. By ROBERT DONALDSON, M.A., M.D., Ch.B., F.R.C.S.E., D.P.H., Lecturer in Pathology and in Forensic Medicine, St. George's Hospital Medical School; Pathologist and Curator of Museum, St. George's Hospital. With a Foreword by Sir HUMPHRY ROLLESTON, K.C.B., M.D. London: William Heinemann (Medical Books), Ltd. 1923. Pp. 364. 15*s*.

THIS book is intended for students beginning the study of morbid histology and for practitioners reading for the higher examinations. The first two chapters are devoted to inflammation in general and the specific reactions of tuberculosis, lymphadenoma, and syphilis. Then follow chapters dealing with the more important microscopic lesions of the various systems, including a chapter on neuropathology, which is much more complete than is usual in a book of this size. Tumours are described in the next half-dozen chapters, and there is adequate space devoted to histological methods and formulæ. An appendix on worm parasites and their ova will probably prove useful to students immediately before their examinations. Except for their tumours, there are no descriptions of the lesions of the genital organs, and the ductless glands are omitted altogether. In order to establish the necessary continuity between morbid histology and the broader aspects of pathology, the descriptions of the histological lesions are preceded by brief accounts of the general pathology of the conditions and their morbid anatomy, a practice which undoubtedly enhances the value of the book. Dr. Donaldson writes clearly and has selected his material with skill. If in one or two minor points he may be open to criticism, he has on the whole avoided successfully those faults into which one who has to teach dogmatically for the sake of brevity is prone to fall.

In one respect his book is unique: it contains no illustrations. This omission is defended partly on the count of expense, both in the Foreword and in the author's preface, but not very convincingly. A practical text-book on histology without illustrations implies not only a power of lucid exposition in the teacher which few are fortunate enough to possess, but also a degree of concentration and native intelligence in the student which can scarcely be expected, and it offends against all modern theories of education. Like most proverbs, that one which states that "there is no royal road to knowledge" is merely epigrammatic nonsense. Of course there is a royal road. It has been built for us by our predecessors, but since its margins are not always very clearly defined, teachers are necessary to guide us through and past the dangerous places. The traveller's powers are quite sufficiently taxed in keeping up with his guide; that his energies should be expended on unnecessary toil, and his progress delayed for the lack of a helping hand, is obviously unsound. An ideal text-book on histology would consist of figures and legends; the greater the ratio of the letterpress to the figures, the greater its fall from perfection.

While we differ from Dr. Donaldson on a point of educational doctrine, we are free to admit that the final judgment must rest with the student; on his decision the success or failure of this otherwise excellent book will depend, and it may well be that he will find in it all the help he requires for the elucidation and study of his histological preparations.

I BELIEVE IN GOD AND IN EVOLUTION.

Second edition. By W. W. KEEN, M.D. London and Philadelphia: J. B. Lippincott Company. 1923. Pp. 102. 4*s*. 6*d*.

THERE has lately been a curious revival in America of the Victorian notion that Darwin and the Bible are incompatible. Some wild Western State is, indeed, reported to have contemplated, perhaps even achieved, legislation prohibiting the teaching of evolution in the schools. The veteran leader of American surgery put out this small book last year to combat this kind of reaction; it has evidently met a want, for a second edition has soon appeared. The proposal defended is sufficiently stated in the title. The book consists of 15 short chapters giving some of the points in man's structure which illustrate his evolutionary history, with brief expositions of the cell doctrine and other related matters. The text will persuade no one who is worth persuading that the idea of evolution is true unless they want to believe, any more than Paley's Evidences ever convinced anyone against his will of the truth of Christianity. What is significant is that a great American, who has spent a long life in the service of his profession and of his fellows, should come forward and say quite definitely that he does believe in God and in evolution too. There will be few persons who will be willing to brush aside such a piece of personal testimony without looking further into the matter.

PHYSIOLOGY OF REPRODUCTION.

Second edition. By FRANCIS H. A. MARSHALL, Sc.D. Camb., D.Sc. Edin., F.R.S., Fellow of Christ's College and Reader in Agricultural Physiology in the University of Cambridge. With contributions by WILLIAM CRAMER, Ph.D., D.Sc., M.R.C.S., L.R.C.P.; JAMES LOCHHEAD, O.B.E., M.A., M.D., F.R.C.S.E.; and CRESSWELL SHEARER, M.D., Sc.D., F.R.S. London: Longmans, Green and Co. 1922. Pp. 770. 36*s*.

THIS book, which has justly earned an international reputation, contains a scientific account of everything of importance which has been discovered or surmised concerning the reproductive functions in animals of all classes, but more particularly in mammalia. It will appeal to physiologists and zoologists, obstetricians and veterinarians, and impresses us as being the product of a lifetime of careful work, and the bibliography showing that the author has searched very widely for information. Few facts are to him too trivial to be included, and no problems too big for thorough discussion. The sections which relate to pregnancy, fertility, sterility, birth, sex determination, menstruation, and lactation are, naturally, of the greatest interest to medical readers; these and other wide subjects are practically treated, while the general outlook of the book is academic.

So well-written, well-published, and valuable a book, and, moreover, one already so well known, needs no further praise. The reputation gained by the first edition has been more than maintained in the present up-to-date version, to which the author's collaborators have contributed no insignificant part.

BOOKS FOR NURSES.

Obstetrical Nursing. By CAROLYN CONANT VAN BLARCOM, R.N. London: Macmillan and Co. 1922. With 200 illustrations and 8 charts. Pp. 558. 15*s*.

THIS is an interesting book written mainly for the purpose of widening the outlook of maternity nurses, and of teaching them that methods with which they may be unfamiliar may be just as efficacious and trustworthy as those which they have been taught in their own training school. Miss van Blarcom was for some time instructor in obstetrical nursing in the Johns Hopkins Hospital, and it is thus not surprising to find that the book contains a clear and most practical account of the subject. One of the features of the book is that a good deal of space is devoted to describing how results similar to those obtained in hospital can be obtained with improvised appliances in the patient's own home. The volume gives an interesting picture of the manner in which maternity nurses are trained in the best of the American training schools, and contains many points which will strike the English nurse as novel but none the less instructive.

While we have nothing but praise for the purely nursing portion of the book, there are some statements relating to midwifery practice to which we could hardly subscribe. The maternal mortality of placenta prævia in a well-conducted lying-in hospital is more nearly 4 than 40 per cent., and surely more mention might have been made of the commonest and in many instances the best method of treatment in such cases —namely, version. Very little is said of the more common variety of slight external accidental hæmorrhage and its treatment. The paragraph dealing with the treatment of more severe cases would give the nurse but little idea of what is usually done. The axis-traction forceps illustrated are of a very old pattern, and the statement that the introduction of bougies is generally followed by the onset of labour within 6–24 hours is unhappily far from the truth. In spite of these minor defects, however, we can fully commend this work, which might well be in the hands of all those who have to undertake the teaching of nurses in obstetrical nursing, and we congratulate the author.

Obstetrics for Nurses. By EVERETT DUDLEY PLASS, M.D., Obstetrician-in-Chief, Henry Ford Hospital, Detroit; formerly Associate Professor in Obstetrics, Johns Hopkins Medical School. London and New York: D. Appleton and Company. 1923. Pp. 410. 15*s.*

THIS book has been written to provide for nurses a simplified treatise on the more or less scientific side of the practice of midwifery. To those who object that the work is too theoretical for nurses the author would say that nurses form one of the best media by which the public can be educated on medical matters. It is doubtful, however, if the degree of general education of the ordinary nurse is sufficient to enable her to make use of such an advanced work as the one under review. It could be used with greater advantage by the average medical student. The book is largely based upon the teaching current at the Johns Hopkins Hospital and this is sufficient to indicate that it is founded on sound principles. A number of excellent illustrations, many of them from Dr. Whitridge Williams's large work on Obstetrics, add to the value of the text. In a book of this kind it is always interesting to see how the author deals with some of the graver emergencies of obstetric practice, such as the ante-partum hæmorrhages. With the section devoted to a description of the nurse's responsibility in such cases we are in entire agreement, although, naturally, we do not agree with all the recommendations as to treatment; these are in many ways controversial subjects and there is still much difference of opinion even among the experts. Nurses who have already some knowledge of the subject will find this book of great use in enabling them to extend and complete their bedside teaching.

Obstetrics for Nurses. Sixth edition. By JOSEPH B. DE LEE, A.M., M.D., Professor of Obstetrics at the Northwestern University Medical School, Chicago. London and Philadelphia: W. B. Saunders Company. 1922. Pp. 525. 15*s.*

THIS excellent little book has reached a sixth edition, clear proof of its worth and usefulness. The author has carefully revised and brought up to date this new edition. In view of the increasing performance of the operation of Cæsarean section the chapter dealing with this procedure has received considerable additions. As the practice of patients being delivered in maternity homes is becoming more and more prevalent more attention has been given to the recognised practice of the best of these institutions, and the technique of the Chicago Lying-in Hospital has been more fully presented. The balance between the two subjects to be considered in a book of this kind—namely, obstetrics for nurses and obstetric nursing—has been well struck, so that neither has been dealt with too fully to the detriment of the other.

We can cordially recommend this book to maternity nurses and midwives as informative and trustworthy.

JOURNALS.

QUARTERLY JOURNAL OF MICROSCOPICAL SCIENCE. Edited by Prof. GOODRICH, F.R.S. Nos. 264 and 265.—The two latest parts contain respectively six and seven memoirs which show the usual diversity of topic within the limits of zoology. Among the articles in No. 264 is one dealing with ovum-like bodies in the testis, by F. A. E. Crew and H. B. Fell, who show how cases of hermaphroditism may be wrongly described; for they illustrate in the testis of a number of mammals round bodies which show a most striking likeness to ova. These bodies are merely due to degenerative processes shown by the normal testicular cells. In No. 265 an important paper is that by W. N. F. Woodland on the Tapeworm genus *Amphilina*. These worms retain the non-strobilated condition of most other "flat worms." Besides giving a full account of the structure of the species *A. paragonopora*, the author surveys critically the other named species of the genus. Prof. T. T. Flynn deals with the "Yolk-Sac and Allantoic Placenta in Perameles," which was originally discovered by Prof. J. P. Hill to be the only marsupial genus with a proper allantoic placenta. In extending Prof. Hill's results the present author comes to the conclusion that the placenta of perameles is most like that of the carnivora among the Eutherian mammals, a point of great interest when the relationship of the extinct order Creodonta to both groups is borne in mind. Incidentally Prof. Flynn laments the approaching disappearance of marsupials of the Tasmanian fauna, and thinks that the developmental stages of the Thylacine will never be investigated, and that "it is extremely unlikely that detailed investigation will be possible in the case of Sarcophilus." An account of the fœtal teeth of the sperm whale is communicated by Dr. F. E. Beddard; the fœtus, only four and a half inches long, of this gigantic mammal, was obtained from whale-fishers in Natal by the well-known curator of Durban Museum, Mr. E. C. Chubb.

THE INDIAN JOURNAL OF MEDICAL RESEARCH for April contains 23 articles. R. McCarrison writes upon the Pathogenesis of Deficiency Disease with reference to the function of the adrenal gland, its relation to hydrogen-ion concentration, and the effect of heat, cold, and sunlight on the action of epinephrin.—H. E. Shortt has an article upon the Pathogenicity of Insect Flagellates to Vertebrates with special reference to *Herpetomonas ctenocephali*.—P. J. Barraud continues his revision of the culicine mosquitoes of India.—S. D. S. Greval contributes a preliminary report upon schistosomiasis in Arabia, from which it appears that both *S. hæmatobium* and *S. mansoni* occur in the hinterland.—U. N. Bramachari continues his articles on the Chemotherapy of Antimonial Compounds in Kala-azar.—F. W. Cragg writes on the distribution of Indian rat fleas and the zoophilism of anopheles in relation to the epidemiology of malaria in India, and together with C. S. Swaminath contributes some observations on the bionomics of *Xenopsylla astia*.—T. N. S. Raghavachari considers the Mills-Reincke phenomenon, or the indirect benefit conferred on a community by a protected water-supply, to be inapplicable to Indian conditions.—J. W. Cornwall writes on the Structure of the Salivary Pump in Certain Blood-sucking Insects, and S. R. Christophers describes a new East African mosquito *A. kingi*.—W. F. Harvey and H. W. Acton have examined the degree of efficacy of anti-rabic treatment, and the former has completed the ninth section of his series on Bacteriological and Laboratory Technique.—L. A. P. Anderson contributes a note on a fumigation method by hydrocyanic acid gas on a small scale.—R. H. Malone describes fallacies associated with the use of laboratory animals for isolating pathogenic micro-organisms.—J. Cunningham and J. A. Cruickshank consider a standard necessary for preparation of vaccine lymph, and describe a new

test.—C. A. Gill writes on his ability to predict malaria epidemics, R. H. Malone on the solubility of micro-organisms in bile, W. F. Harvey and K. R. K. Iyengar on the duration of protection after prophylactic inoculation.—H. E. Shortt has a record of kala-azar research work carried out in Shillong in 1922.—M. H. Sowerby gives an account of bovine tuberculosis in the Bombay Presidency.

ANNALES DE L'INSTITUT PASTEUR. Vol. XXXVII., No. 4, April, 1923.—This number opens with a review by M. Nicolle and E. Césari on the present methods of diagnosing pathogenic organisms. They note the difficulty of speaking strictly of species of bacteria, and point out that, on the other hand, the reactions of antigen and antibody connote "specific" groups sometimes of a different order. The difficulties in the way of identifying a given specimen of an organism may be very great or even insurmountable on account of loss (perhaps temporary) of certain characters.—E. Marchoux gives an interesting account of the clinical symptoms and pathological changes in a human case of a disease which he believes to have been identical with rat leprosy. The case had been diagnosed as an unusual form of human leprosy. The lesions much resembled leprosy, and were crowded with acid-fast bacilli, as may be seen figured in the coloured plates. The disease was, however, experimentally reproduced in the rat. The patient died of secondary streptococcal infection.—G. Sanarelli contributes a paper on the experimental infection of animals (rabbits and guinea-pigs) with the cholera vibrio. He deals with the manner in which these microbes can enter the body, and details experiments to show that they can reach the blood through the buccal or nasal mucous membrane, and then, rapidly leaving the circulation, settle in the intestinal walls.—An important communication, by L. D. Walbum and J. Mörch, from the Serum Institute at Copenhagen describes the effect of intravenous injection of chloride of manganese and other metallic salts on the yield of antibodies in animals undergoing immunisation. Experiments were made on rabbits, goats, and horses which, under this form of auxiliary treatment, produced very much enhanced supplies of antitoxin or agglutinin. A considerable number of experiments are described in detail. Figures relating to the rate of production in units of antitoxin per c.cm. support the claim that the administration of these salts to horses in this way is a valuable addition to the previous methods in use. The irregularity in the production of antitoxin due to variations in the strength of the available toxin are held to have been excluded.

A FURTHER NOTE UPON THE PERIODICITY OF INFLUENZA.

BY JOHN BROWNLEE, M.D., D.SC.,
DIRECTOR OF STATISTICS, NATIONAL INSTITUTE FOR MEDICAL RESEARCH.

SOME time ago I published a note upon the periodicity of epidemics of influenza,[1] and I think that the present time admits of a second short statement regarding how far the 33 weeks periodicity in influenza outbreaks has been maintained. In 1918 and 1919 there were three large epidemics of influenza. From the crest of the July epidemic in 1918 to the crest of the epidemic in March, 1919, is 33 weeks, but there is no evidence of the further continuance of a periodicity starting from July, 1918.

If a 33 weeks period holds, then the start must be from the very large epidemic which culminated in the first week of November, 1918. In the accompanying table I give the weekly deaths from October of that year in a series of columns, indicating the epoch when an epidemic would be expected by a vertical line to the right of the figures. In the former statement it was noted that unless the expected period falls between the beginning of November and the middle of June an outbreak was very unlikely. From November, 1918, the first outbreak was due about the twenty-seventh week of 1919, and according to expectation no increase in the number of deaths is noted. The crest of the next epidemic was due in the eighth week of 1920, the epidemic actually culminating in the twelfth week. The next cycle should culminate in the forty-first week of the same year. Nothing is observed, as would be expected. In 1921, the twenty-second week marks the crest of the cycle. The greatest number of deaths in the epidemic this spring, however, occurred on the ninth or tenth week, though there was a slight recurrence which had its maximum in the nineteenth week. A further 33 weeks brings us to the third week of 1922, which, as seen from the table, marks the height of a very severe epidemic. The following cycle was due in September; as usual, at this season no effect in the death-rate is observed. The seventeenth week of this year is the next date of the epidemic crest, and it is easily seen that although during the last week there were still 207 deaths, this must be about the middle of the epidemic wave.

On evidence like this too much stress cannot be laid, but it is interesting to note that so far the cycle has held fairly true, only one epidemic occurring independently. To myself, however, it would be more convincing if the cycles recurred in sequence to the epidemics of July, 1918, and March, 1919, rather than to the November epidemic, which for the season of its occurrence has, during the last 30 years, been unique phenomenon.

[1] THE LANCET, Nov. 8th, 1919.

Weekly Deaths from Influenza in 96 Great Towns. October, 1918–1923.

No. of week.	1918.	1919.	1920.	1921.	1922.	1923.
1		441	73	101	819	57
2		380	62	87	1262	69
3		274	85	66	1433	78
4		222	66	61	1450	69
5		272	98	61	1144	65
6		604	109	93	759	66
7		1363	162	103	670	71
8		3046	178	138	525	59
9		3889	196	167	306	79
10		3218	229	149	201	84
11		2320	312	151	146	81
12		1361	392	121	104	125
13		888	379	130	113	120
14		569	332	97	117	188
15		468	306	111	109	184
16		347	259	82	93	169
17		229	202	93	75	143
18		172	201	104	69	175
19		142	216	114	55	207
20		108	211	94	45	
21		63	188	71	55	
22		51	148	67	36	
23		60	86	33	26	
24		41	65	35	27	
25		29	37	32	18	
26		33	34	20	25	
27		17	44	25	22	
28		31	33	27	24	
29		18	21	19	18	
30		23	33	25	22	
31		18	26	14	19	
32		21	30	15	15	
33		18	16	9	11	
34		16	20	12	16	
35		15	17	17	10	
36		19	20	21	12	
37		29	28	27	18	
38		14	18	22	21	
39		20	27	37	28	
40		32	33	34	32	
41		39	34	49	31	
42	1895	57	30	46	43	
43	4482	71	35	30	41	
44	7412	71	29	32	48	
45	7560	56	42	44	71	
46	5916	74	60	59	64	
47	5106	79	69	80	71	
48	5119	63	65	128	60	
49	3574	77	61	149	52	
50	1885	81	75	212	68	
51	1014	64	81	237	61	
52	581	43	90	418	51	
53		52				

THE LANCET.

LONDON: SATURDAY, JUNE 2, 1923.

THE GENERAL MEDICAL COUNCIL.

THE opening of the 117th session of the General Medical Council on Tuesday last, May 29th, occurred on the day after the President, Sir DONALD MACALISTER, had completed the further term for which he had been elected as President. The academic position therefore was that his Address took the form of a communication setting forth the chief events with which the ex-President had dealt during the period that had elapsed since the last meeting. But as Sir DONALD MACALISTER'S re-election to the chair followed immediately, this communication became the official Address. This is the nineteenth Address which he has delivered from the chair during 34 years of consecutive service on the Council, and it needed no assurance from himself that his interest in the work of the Council is as keen now as it was when he first joined its membership, for his conduct of business in the chair has regularly and increasingly confirmed the fact. We congratulate the Council on giving a fresh proof of their conviction that no change of President is required.

As will be seen from another column Sir DONALD MACALISTER was able to report interesting progress in certain directions. He noted that legislation had taken place amending the Dangerous Drugs Act and in certain details the old Pharmacy Act of 1868, thereby abating the stringency of certain rules in regard to the scheduled drugs as they affected registered practitioners, while strengthening the penal code for criminal breach of the regulations. At this point he was able to express the sense of the Council of the assistance that had been given in shaping the new Act by Members of Parliament also registered medical practitioners, and there is no doubt that the House of Commons gained distinctly during the passage of this measure by the fact that throughout the considerable discussions men who actually knew where the dangers lay were able to speak of them from first-hand knowledge. The Dangerous Drugs Act might easily have become actually oppressive to practitioners. We congratulate Sir SYDNEY RUSSELL-WELLS, a member of the Council, and his medical colleagues in the House of Commons on having shown that the presence of members of our profession is a gain to the House and to the community. The closing paragraph of the Address deals with the statistics of the medical profession, which it is always well to have before us because of the two conflicting statements regularly made in public, that the medical profession is overcrowded, and that the medical profession is undermanned. It may be remembered that during the years 1916–19 there was a rapid rise in the number of registered medical students—namely, from 1875 to 3420, and that then the figures fell, until last year the total was much the same as it had been six years previously. The indications are that this figure—namely, something between 1800 and 1900—will be maintained unless the new regulations lead to its diminution. The question is, whether this recruiting figure, on transformation into terms of registered medical practitioners, will maintain the medical profession in its proper numerical relation to the public. We believe, and we think the opinion is shared by those who have given serious thought to a serious matter, that the total of registered practitioners can be kept at its right proportion upon the material which is now finding its way into our ranks as students, but it is to be hoped that the organisation of the profession will lead to a better distribution of the personnel. For it is the faulty distribution of our practitioners which gives the conflicting impressions that their number is too large or too small.

BRITISH EMPIRE CANCER CAMPAIGN.

WE publish this week the appeal of the British Empire Cancer Campaign, which sets out briefly and well what may be considered the general opinion of enlightened persons in respect of cancer problems; apathy should be impossible in face of the destruction of life, but panic should be equally unwarranted, while so much has been done, and while so much is in the doing to clear the paths towards prevention and remedy. The mortality from cancer is given in the appeal, and the ignorance of causation is admitted to affect profoundly all big schemes in either direction. The general message of the appeal is that a great movement is needed under which medical work along all its branches, and lay work in all its developments, should be directed towards the amassing, collating, and sifting of evidence bearing upon causation. The new movement, it is expressly said, will supplant nothing good that is being done; it will not interfere with those who are already striving, and, be it remembered, striving with certain definite good results, to free mankind from one of its direst foes. On the contrary, it proposes to advance and supplement all individual and coördinated activities as they exist, forming in regard to these activities a general bond alike for the improvement of methods and the avoidance of overlapping. If certain experiments, directed towards clearing up one of the cancer problems, can be assisted either by analogous experiments under different conditions, or by different experiments under analogous conditions, valuable help to the researches will be afforded; and if upon the multiplication of these researches statistical methods can be brought to bear, in order to ascertain what common truths have emerged, every aspect of cancer research will gain in clearness. The variety of environment, or the variety of personal equation in the investigations, can be made allowance for, and all workers will feel that they stand upon more solid ground.

New movements cannot bring about the prevention of cancer because the prime effort is to be made in search for the cause. This is true, but while the scientific explorer cannot promise that the shaft which he sinks will reveal precisely the ore for which he is hunting, nothing valuable can be brought to the surface save by mining; and as a set-off to this uncertainty it must be remembered that unexpected treasure has been gathered in over and over again by experimental methods. But a proportion of the material results of any Imperial appeal of this sort should be devoted to the relief of conditions whose primal origin we do not know, for at any moment, if a method of relief proved successful, light might be shed upon every aspect of the case. It is the logical and desirable sequence of events in all courses of

therapy to know the cause, to remove it, and to obtain relief; but it is also logical to deduce from the measure of success with which a method has met the cause of the originating mischief. All intelligent clinical work is research work, and research work into cancer, when conducted at a hospital which is in touch with a first-rate teaching school, means to-day a combination of bedside and bench inquiry. At such an institution the best consensus of opinion upon a new procedure can be obtained. Methods that have been approved at special institutions can be employed by other clinicians, and the voices of the chemist and physiologist can be heard either upon points of dispute or in origination of plans made feasible by laboratory experiment. All the money obtained by the appeal should be used to search out the cause of cancer, but it is to be hoped that the Executive Council of the movement will recognise that a cause is best identified by showing that its removal leads to prevention or that its identification leads to improved clinical treatment.

Many of us know that discoveries in certain laboratories are giving good reason for encouragement. Therefore it is necessary—and this is recognised in the appeal—that support should be rendered from the beginning by the new fund to the endowments of the existing centres of cancer research. And all grants should in the main be given without stipulations or restrictions limiting the nature of the investigations for which they are to be used, since (the truism has already been indicated) it is impossible to say what line of research may lead to issues of practical value. Taking the cancer problem as a whole, the time for definite team-work has not yet come, for there is as yet no one road along which a team can be driven. But different circumscribed problems may arise which for some special reason have not been attacked by the existing institutions and which could be dealt with by a temporary organisation of ad hoc workers. In applied sanitation, in veterinary medicine, and in botany many things are occurring whose explanation might have a great bearing, by analogy, on the explanation of cancer, and along all such lines the new organisation proposes to act as a clearing-house and to instigate and support investigation. The Executive Council, whose names are appended to the appeal, we are informed, is provisional, in that necessary names can be added; this is good hearing, for strong as it is in certain directions, the absence from its consultations of the representatives of four important branches of science cannot escape attention. We understand that it is possible that the Medical Research Council may nominate, in consultation with the Royal Society, some men with first-hand knowledge of research work, certain of whom, we hope, will be available to act as chairmen of the working committees which it is proposed to set up. The British Empire Cancer Campaign includes on its executive many strong and well-selected persons, has behind it the great organisation of Red Cross and sound financial backing, while it arrives in reply to widely expressed public demand. Its success should therefore be assured.

GLASS OR METAL CONTAINERS?

IN an interesting book on "Botulism," which was reviewed in THE LANCET last week, Dr. GERALD LEIGHTON points out that it is only by efficient sterilisation that any foodstuff can be rendered absolutely safe when preserved. In discussing the temperatures required he raises the point as to whether the containers themselves will stand the heat required, particularly if made of glass. The latest investigations show that the spores of *B. botulinus* are very resistant, and indeed, according to ESTY,[1] more so than those of the other anaerobes which he tested. While the heat resistance of different strains of *B. botulinus* varies considerably (and ESTY tested 112 different strains) their maximum resistance was as much as 330 minutes (five and a half hours) at 100° C. LEIGHTON quotes the California State Board of Health regulations, which require for large-size spinach tins heating for one hour at 252° F. (122° C.), and for olives 240° F. (116° C.) for not less than 40 minutes. In any question involving the temperatures of sterilisation for canned foods the type of container used is of importance. LEIGHTON discusses this question at some length, and points out that while the glass container is preferred by the average consumer, and has undoubted advantages, it is open to doubt whether these advantages are not outweighed by other adverse features, including the risk of fracture and the liability to under-sterilisation. In a valuable report to the Local Government Board on Preservatives in Meat Foods packed in Cans or Glass, Dr. A. W. J. MACFADDEN[2] pointed out that until recent years most of the preserved foods manufactured in this country were packed in tinplate receptacles, but that it has been supplanted of late years to a very large extent by glass and earthenware, more especially the former, in the case of goods intended for the home market. He added, "So much have glass-packed food materials advanced in public favour, that it appears to be profitable for certain home manufacturers to transfer imported canned meats, such as tongues, sardines, &c., from their tin receptacles into glass containers."

The respective merits of glass or tin are of considerable practical importance, and something can be said on either side. The main advantages in favour of glass containers are that they avoid metallic contamination, the purchaser can get a view, although a very partial and imperfect view, of what he is buying, they are more easily opened, and appear to be cleaner. The consumer often has the idea that food in a glass retainer is a superior type of product and so is willing to pay more for it when so vended. The advantages of tins are that they are cheaper, they cost much less in freightage rates, they are more readily sterilised with less risk of damage or fracture, and it is easier to make them hermetically tight. Our knowledge is sufficient to weigh critically these relative advantages and disadvantages and to advance an opinion on public health grounds as to which is to be preferred. Of the advantages of glass, apart from the real convenience of ease of opening, the only one of any importance is its avoidance of metallic contamination. The manufacture of tins has improved enormously, and with the modern type of tin the risk of lead poisoning is practically non-existent. The possibility of tin contamination remains, but it is evident that the danger of tin poisoning has been enormously exaggerated, and in spite of the vast increase in the consumption of tinned foods there are no recent proved cases of tin poisoning. Provided very old and stale tins are kept off the market, the

[1] J. R. Esty: American Journal of Public Health, February, 1923.
[2] A. W. J. MacFadden: Report No. 6 (Food) Local Government Board, 1908.

danger of tin poisoning hardly exists. From the scientific standpoint, not only in relation to botulism but also as affecting general bacterial contamination, the two factors of most importance are the efficiency of sterilisation and the problem of satisfactory closure. The sterilisation of canned foods is an extremely complicated problem, and is governed by many factors, most of which operate whether tin or glass containers are employed, and only those which affect this particular issue need be discussed. It has been pointed out that to make foods safe against the risk of botulism very high and sustained temperatures are necessary. It is true that it is possible for glass to be manufactured and used possessing high resistance to heat and which will stand these sustained high temperatures. Such special glass is considerably more costly, and unless definite regulations as to its use are made obligatory there is a strong inducement to manufacturers to use cheaper glass which may not stand the strain. The fact that a higher percentage of loss from fracture is to be anticipated is an ever-present inducement to the operative in charge of the sterilisation to avoid this by using lower temperatures, even if these are unauthorised. These points can be summed up by saying that the use of tin containers undoubtedly facilitates the task of the canner in submitting his food to safe sterilisation temperatures.

The greater ease with which tins, as compared with glass, can be made air-tight is probably of as great importance as the question of resistance to heat. The extensive work recently carried out for the Food Investigation Board has demonstrated the great significance of air access as a factor in spoilages. The point is of particular pertinence as regards the botulism risk. There is considerable evidence that the spores of *B. botulinus* alone—i.e., if unaccompanied by any living bacilli or toxin—are unable to originate the disease when introduced into the body by the mouth. Should, therefore, a few spores be present and remain undestroyed by any sterilisation given it is of fundamental importance to prevent their development into bacilli which will then produce toxins. In this connexion an air-tight container is an important factor, for even with such a srict anaerobe as *B. botulinus*, air access (for complicated reasons which need not be discussed) facilitates the development of the spores into bacilli with the production of their excessively poisonous toxin. The closure of tins has now reached a high degree of efficiency, and the percentage of tins not air-tight has for most products been reduced to very small proportions. With glass containers the problem is much more difficult, and from this point of view glass would seem to be decidedly inferior to the tin container. A consideration of all these factors strongly favours the view that the risk of harmful bacterial infection, including botulism, is decidedly less if tin containers are given the preference to glass.

UNIVERSITY OF LONDON.—A course of four advanced lectures on Tropical Hygiene will be given at St. Bartholomew's Hospital Medical College, West Smithfield, E.C. 1, by Dr. Andrew Balfour, at 5 P.M. on June 12th, 14th, 19th, and 21st. The subjects to be dealt with are: (1) Sojourners in the Tropics; (2) Problems of Acclimatisation; (3) Some Foodstuffs in the Tropics; (4) Modern Weapons against Insect-borne Diseases. The chair at the first lecture will be taken by Lord Stanmore. The lectures are addressed to advanced students of the University and to others interested in the subject. Admission is free, without ticket.

Annotations.

"Ne quid nimis."

THE EXTENSIONS AT UNIVERSITY COLLEGE MEDICAL SCHOOL.

THE new building at University College, London, arranged to house the departments of anatomy, histology, and embryology, which was inspected by the King and Queen on May 31st, is an imposing edifice. The building, designed by Prof. F. M. Simpson, F.R.I.B.A., faces Gower-street, and has a frontage of 154 feet, exclusive of the end gateway, which gives access to the south quadrangle. At the back it joins the physiology building. It consists of five floors, and in addition a sub-basement, which contains the heating chambers, coke cellars, tank, and specimen rooms. Of the five floors the lowest is devoted mainly to practical work in anatomy—that is, dissecting and radiography—the next floor to teaching accommodation and museums, the third and fourth to research in anatomy, histology, and embryology, and the top floor to teaching in microscopic anatomy. On the basement level the large top-lighted dissecting room adjoins rooms for the X ray examination of the living subject and for the study of X ray plates, so that students may be able, when dissecting any region of the body, to correlate the X ray appearance with what they see and handle in their dissections. On the ground floor are the museum and preparation room, a lecture theatre, fitted with the latest Zeiss epidiascope, a demonstration theatre, and rooms set apart for teaching and research in anthropology. The first floor contains a library, certain private and research rooms, and a laboratory for comparative neurology, where a collection of neurological preparations will be housed. Laboratories for embryology and histology occupy the second floor, where adequate accommodation for preserved material and microscopical preparations is also provided, besides a lecture room fitted with apparatus for projection of histological preparations and dark rooms for photographic work. The main students' laboratory for microscopical anatomy is situated on the third floor. It extends across the width of the building and is lighted by two continuous sky-lights facing north, as well as by windows facing the south quadrangle on the one side and Gower-street on the other. About 90 students can be accommodated in the laboratory, adjacent to which are preparation rooms and research laboratories. Accommodation for keeping live animals is also provided, and a room is set aside for the cinematographic study of animal movements by an apparatus by means of which it is possible to take up to 300 photographs per second of moving objects. Since the film can be projected at a rate of about 16 to 18 per second the whole movement is observed slowed 10 to 15 times, and by this method the analysis of reflex movements and muscular adjustments such as those of posture will be rendered possible. The X ray department is admirably equipped and the protection of all engaged in the work of the department has been carefully provided for. Part of the Rockefeller gift, which has made it possible to erect this model institution, has also been used to effect certain much-needed alterations and extensions in the departments of biochemistry, pharmacology, and physiology. On the ground floor the general biochemical laboratory receives an extension behind the anatomy theatre, and the biochemical research laboratories are also enlarged by taking in the whole ground floor of the pharmacology building. In pharmacology further accommodation for research is procured by dividing the present pharmacology lecture theatre into two laboratories, and this department receives also two extra laboratories on the second floor of the physiology building. A large part of the first, second, and third floors of the building connecting the present Institute of Physiology with the Institute of Anatomy is used

for increasing the accommodation for research in physiology. On the three upper floors there is free communication between the two institutes. From the basement a tunnel leads under Gower-street to connect with the Medical School. Space prevents a more detailed description of the structural features of the new institute, but enough has been said to show that the Rockefeller gift is being expended with wisdom and foresight. The development of a great medical school, it is true, depends less on spacious buildings than on tradition and teaching, but the stimulation of a well-equipped institution must go far towards the establishment and maintenance of those high ideals of medical education which the Rockefeller Foundation seek to propagate. We wish well to the school chosen to help in this great work, and have confidence that University College Medical School will be worthy of its buildings.

THE FECUNDITY OF THE HOOKWORM.

THE comprehensive American investigations into hookworm infection continue. In a recent number of the *American Journal of Hygiene* (Vol. III., No. 2) there appears an interesting article by N. R. Stoll on the relation between the number of eggs voided and the number of worms present in cases of hookworm infection. At first sight such a relation might seem of purely academic interest, but it is really of some practical importance, because it presents in a rough but concrete form some idea of the enormous task involved in the administrative control of hookworm disease. Basing his figures on careful counts of ten characteristic but varied cases, Stoll arrives at the conclusion that each female worm produces an average of 9000 eggs per day. The average number of female hookworms found in these cases was 240. From this one may gather that the average hookworm patient voids over two million hookworm eggs per day. In some cases on certain days the number may even reach five million. The effect of this extraordinary fecundity is modified, however, by the fact that possibly not more than a quarter of these eggs produce viable larvæ, but even this reduction leaves an almost incredible number of potentially infective larvæ. We cannot avoid viewing these figures with some dismay, but there is at least this element of satisfaction—namely, that the thorough cure of each individual patient removes an enormous amount of potential infection.

A NEW REVIEW OF ENDOCRINOLOGY.

WE have recently received the first number of the *Revue Française d'Endocrinologie*,[1] which is published in Paris, and edited by Prof. M. Lucien, of Nancy, and his assistants. In an introductory article Prof. E. Gley summarises the history of the contributions to this branch of medical science which have been made by his compatriots. It is indeed to Claude Bernard that we owe the first clear conception of the process of internal secretion; in 1859 he wrote: "There exists a group of organs resembling glands, but differing from them in that having no excretory ducts their secretions are poured into the blood-stream itself." During the same period the pioneer researches of Brown-Séquard aroused the interest of all physiologists in this subject. Since then there has been a continual output of careful and illuminating research by French investigators; it is only necessary to mention the work of R. Lépine on diabetes, of P. Langlois on adrenalectomy, of Pierre Marie on diseases of the pituitary gland, and the numerous researches of Prof. Gley himself, to demonstrate the importance of the French contributions to our knowledge. Inspired by such a history of national achievement we feel sure that the new journal will contain matter of interest and importance; and the contents of the opening number encourage such a belief. E. Sergent and P. Oury give a detailed account of a case of acute adrenal insufficiency. L. Cuénot discusses the interesting question of the relation of the internal secretions to heredity; and Dr. Mauclaire describes the present possibilities of glandular grafting. In addition there is an epitome of the more important recent medical literature dealing with endocrinology in all its aspects. There is one further point to be noted. In the advertisement columns of the new journal we find announcements, by a dozen or more commercial firms, of products derived from animal tissues, which science at the present day tells us to be either of unknown action or else inert. The multiplication and exploitation of products of this nature has tended to throw disrepute on the whole subject, and at least one important journal devoted to endocrinology edits its advertisement columns even more carefully than its scientific text. It is to be hoped that future numbers may contain less clamorous announcements of expensive extracts of heart-muscle, gastric mucosa, spleen, placenta, lung, lymphatic glands, and other tissues which respectable cooks reject, and food-controllers classify as "offal."

[1] Paris: Gaston Doin. Bi-monthly. Fr.5.

NEUROTROPIC STRAINS OF SPIROCHÆTA PALLIDA.

LONG before the causal organism of syphilis was known, the connexion between general paralysis of the insane and this disease was well recognised. In France, especially under the influence of L. Fournier, it was held that this connexion was a constant one, but in this country the relationship of the two diseases, although recognised as close, was not always conceded to be invariable. With increasingly efficient methods of demonstrating the spirochæte, and especially as a consequence of the introduction of the Wassermann reaction, the causal relationship of syphilis to general paralysis became more and more generally admitted until, with locomotor ataxia, the disease became classified as quaternary or parasyphilis. Nevertheless there have always remained many lacunæ in our knowledge, and peculiarities in these diseases which mark them off from the other manifestations of syphilis. Syphilis of the brain, gummatous in form, may occur and be comparable with the disease in other parenchymatous organs, but the lesions of general paralysis and tabes are peculiar in that they are degenerative instead of formative as are the other syphilitic lesions with which we are acquainted. There is, further, a definite lack of relationship, amounting to an actual dissociation, between the gummatous manifestations of syphilis and these two dreaded quaternary forms. It is, in fact, rare to find any signs of active or past tertiary lesions upon the cadaver of a general paralytic. These peculiarities have marked off parasyphilis as an entity with special features, and the theory gradually took shape, at the hands of many writers, that this particular manifestation of syphilis is due to a type of treponema having special affinities for the central nervous system. As knowledge of the spirochætes has progressed, variations in the character and behaviour of different strains have come to light which suggest that here, as with so many groups of pathogenic organisms—e.g., the pneumococci, meningococci, and spirilla of relapsing fever—we may meet with varieties having different properties and degrees of pathogenicity within the pallida group. An example of two strains having quite different pathogenic abilities for rabbits, and, what is particularly striking, failing to induce in these animals immunity against each other, has been quoted by Fournier and A. Schwartz in a recent number of the *Annales* of the Pasteur Institute.[1] The question of the existence of special neurotropic strains of the syphilitic spirochæte was taken up by C. Levaditi and A. Marie in 1919, and recently, returning to the subject, they claim that similar variations in virulence to those

[1] L. Fournier and A. Schwartz: Pleuralité des tréponèmes, Annales de l'Institut Pasteur, vol. xxxvii., No. 2, February, 1923.

which we have just mentioned are associated with such properties in spirochætes as give them special affinities for the nervous system or the cutaneous and visceral organs, and after infection will tend to cause general paralysis on the one hand or gummatous lesions on the other.[3] The strains of spirochætes which these workers consider neurotropic, which have been obtained from cases of general paralysis, cause only mild cutaneous lesions in the rabbit, whereas strains which they regard as dermotropic tend to give rise to more severe lesions. The validity of many experiments on these lines has been called in question by the discovery of a spontaneous genital disease of rabbits, due to *S. cuniculi*, an organism morphologically indistinguishable from *S. pallida*. The further experiments of Levaditi and Marie show a complete lack of relationship between *S. cuniculi* and *S. pallida* of chancres. They do not, however, appear to have absolutely established a like independence between their neurotropic spirochæte and *S. cuniculi*, although they make out a partial claim to have done so; for this reason judgment upon their results must be suspended for the present, although their great interest is not affected. The distinction between the neurotropic and common strains of the syphilitic spirochæte is based upon differences in the results of rabbit inoculations and upon an absence of the capacity of the one variety to render an animal resistant to infection by a strain of the other, several experiments being quoted to illustrate this absence of crossed immunity. The sum of these results and the often striking clinical facts which stand in relationship to them, amongst which we must include the much quoted frequence of parasyphilitic troubles in persons who have contracted their syphilis from the same source, is summarised thus: "Parasyphilis is a separate and distinct type of the specific infection, and is due to strains of treponemata which differ biologically and morphologically from those which are found in the commoner cutaneous, mucous, or visceral manifestations of the disease."

RADIUM IN THE TREATMENT OF CANCER OF THE UTERUS.

THE recent discussion at the Société de Chirurgie, reported in *Paris Médical* for May 5th, showed very plainly that whatever the prospects of radium treatment may be, its present position is very insecure, not merely as a substitute for operative treatment, but even as a supplement thereto. At first sight the time might seem to have come when the claims of radium treatment of cancer of the uterus might be settled, one way or the other. It has, indeed, been given a trial for many years. But so long as the technique of radium treatment is improving, trials in the past cannot be considered as fair, and it is probable that many years must yet pass before the technique has reached that stage of perfection which the operative treatment of cancer of the uterus was so long in attaining. There is yet another reason why we cannot at present form an equable opinion of the merits of radium in this matter; many years must elapse before its immediate good effects can be proved to be permanent. At the meeting to which we have referred, Dr. Gosset and Dr. Robert Monod discussed the value of radium treatment as a supplement to operative treatment, and Dr. Monod gave an account of 30 cases—most of them bad cases—which he had operated on, supplementing operative with radium treatment. He had only two operative deaths, and he had found that a preliminary course of radium treatment had greatly facilitated the subsequent operation, a less radical hysterectomy than Wertheim's being performed. Microscopic examination of portions of the cervix excised before and after radium treatment had been made, and in 25 cases the second examination showed complete disappearance of the new growth. These two speakers were therefore very favourably impressed by the combination of radium with operative treatment—a combination which they considered a very real advance. During the discussion which followed they received considerable support, but one speaker, Dr. Faure, gave this combined procedure only his partial approval. He believed that in certain inoperable cases radium treatment could render them operable, but he doubted whether cases already operable derived appreciable benefit from a pre-operative course of radium treatment. Of 33 cases operated on without radium treatment, 14 had ended in recovery. Of 44 cases treated by both radium and operation, 22 had ended in recovery and 22 in relapse. The comparison of these two series was thus hardly in favour of the combined method. Another speaker was not inclined to use radium before operation in operable cases, but he was in favour of post-operative radium treatment. Yet another speaker had given up post-operative radium treatment to return to pre-operative applications of radium. It is evident from the report of this discussion that the problem dealt with is still very far from a final solution.

[3] C. Levaditi and A. Marie; Pleuralité des virus Syphilitiques, ibid.

MEDICINE IN THE ORIENT.

A STRIKING instance of the catholicity of scientific medicine is afforded by the issue of the new *Journal of Oriental Medicine*, the organ of the Oriental Medical Association of Manchuria. This journal, which is edited by Dr. T. Suzuki and Dr. J. Murakami, is to be published quarterly. The first number contains contributions in Chinese, English, and German. Up to the year of the establishment of the Republic in 1911 medicine in China was in a very backward state; when it is remembered that anyone can practise medicine in that country without the possession of a diploma it might be imagined that little or no amelioration of the conditions of things has since taken place. This, however, is not so, for with the Republic a new era in modern preventive medicine commenced, and steady progress has since been maintained. One of the first things which attracted the attention of the new Republic was the success of Western methods of treatment in the suppression of pneumonic plague in Manchuria in contrast with the results of crude and haphazard native methods, and as a result the North Manchurian Plague Prevention Service was established. This consisted of hospitals at Harbin, the commercial centre of North Manchuria and the principal focus of infection in 1911, at Tsitsihar, Sansing, Newchwang, Taheiho, Manchouli, and Lahasusu. In 1913 a presidential mandate was issued authorising the dissection of dead bodies in China, whilst sanction was given for the cremation of cadavers. In the following year a National Medical Association was founded with 30 medical graduates from European, American, Chinese, and Japanese colleges as a nucleus. The membership grew rapidly, and several medical conferences have been held under its auspices. In 1915 a mandate was issued recognising Western medicine as the proper standard of medical practice in China, by which anyone practising medicine in the country will be required to produce a certificate from the police, and since then hospitals and medical colleges have arisen in different parts of the country. A feature of the great progress made has been the increasing coöperation of Chinese and foreigners; missionary institutions invite more and more the assistance of Chinese colleagues, many of the native doctors having received a first-class training abroad. Among other evidences of progress has been the formation of a Terminology Committee to determine medical terms for use throughout China, and the series of resolutions passed at the fourth biennial conference of the National Medical Association of China last year, one of which requested in effect the Central Government to establish a legally qualified medical profession.

In the eighth year of the Republic a Central Epidemic Prevention Bureau was founded by means of the surplus of the fund raised to suppress the

epidemic of pneumonic plague then raging in the northern provinces. The bureau has attracted numbers of Chinese medical men interested in public health work, and has furnished doctors for field work during various epidemics of cholera, pneumonic plague, and typhus occurring since its foundation. In 1921 a reorganisation of the bureau took place; an annual maintenance grant was obtained from Maritime Customs revenue, and a Medical International Board of Managers—having at its head Dr. S. H. Chüan, formerly Medical Director-General of the Chinese Army—was created and took over the direction of the bureau. The latter now possesses two departments, one devoted to laboratory work, the other to field service. The first bulletin of the bureau, written by Dr. Edgar T. H. Tsen, head of the laboratory department, printed in English and bearing the title "Notes on Biologic Therapeusis," appeared in January of this year. Dr. Chüan contributes a general foreword, and three other members of the International Board write introductory notes in English, Chinese, and French respectively. The various sections of the bulletin deal with methods of injection, serum reaction, general and particular considerations of vaccines and sera, and diphtheria toxin and toxin-antitoxin. Appendices contain information relating to the field service department, charges for various laboratory examinations, and the prices of biological products. No better evidence of the progress of medicine in the Orient could be desired than these two publications. The difficulties which faced the pioneers of Western medicine during the earliest days of the now well-advanced transitional period are clearly described in a chapter on Medical Education in China, contributed by Dr. George Hadden, of Changsha, to a recent publication of the Student Christian Movement,[1] which is described as a series of open letters on professional subjects from missionary doctors practising abroad addressed to their colleagues at home. Another of these chapters, by Dr. G. Duncan Whyte, of Swatow, contains a useful reminder that "while . . . there is much that is ludicrous and a great deal that is dangerous in (indigenous) Chinese medicine, yet many of the fundamental ideas that actuate the native doctor are very sound, and some of his drugs are most useful."

ÆTIOLOGY AND PROGNOSIS OF CIRRHOSIS OF THE LIVER.

AN important monograph has recently been published by Prof. S. Laache,[2] of the University of Christiania, on cirrhosis of the liver. His material consists of 44 cases, 34 of which came to necropsy. During the 32 years in which these cases occurred, 16,000 patients were treated in Prof. Laache's medical wards, and he accordingly estimates the incidence of cirrhosis of the liver among in-patients in medical wards at 0·28 per cent. This ratio is surprisingly low. With regard to the ætiology, there was a history of alcoholism only in 39 per cent., and all the patients giving a history of alcoholism were males. Not one of the 14 women suffering from cirrhosis of the liver confessed to alcoholism, and the questions therefore arise: (1) Are men more truthful than women when questioned on this rather tender subject? (2) Do men drink much more alcohol than women? (3) Is the male liver more susceptible to alcohol than the female liver? These are questions to which Prof. Laache has found no final answer, and it is significant that in as many as 12 of the 14 cases of cirrhosis of the liver in women its cause remained obscure. It was also obscure in many of the male cases, and as Prof. Laache points out, only a minute fraction of bibulous males suffer from cirrhosis of the liver, and the development of this disease must therefore probably depend on a certain predisposition, without which alcohol cannot provoke cirrhosis. This point is well worth bearing in mind when the present decline in the incidence of cirrhosis of the liver is correlated with a real or supposed decline in the consumption of alcoholic liquors. With regard to prognosis, Prof. Laache confirms the old observation that ascites is an ominous sign. It was present in 81 per cent. of the 26 cases of atrophic cirrhosis coming to necropsy, and the duration of life after the development of ascites was, on the average, only 10 to 12 months for men and only five to six months for women. The longest span of life after the development of ascites was only 30 months. Statistics such as these are not encouraging, and they suggest that cirrhosis of the liver with ascites is a hopelessly terminal stage, or that the treatment hitherto advocated is hopelessly inadequate. Paracentesis abdominis is but a symptomatic remedy, and in Prof. Laache's experience it may sometimes do more harm than good; in one of his cases hæmatemesis followed this operation. A drug which he has found remarkably effective in some cases is calomel, and he is also in favour of a salt-free, lacto-vegetarian diet. But in view of the ultimate results in the majority of his cases there would seem to be ample scope for therapeutic reforms in this field.

THE PSYCHOLOGY OF EPILEPSY.

ON May 24th, under the auspices of the University of London, Dr. E. T. Wiersma, Professor at the Psychiatric and Neurologic Clinic at Groningen, delivered at the Royal Society of Medicine an Anglo-Batavian lecture on the Psychology of Epilepsy. He gave an admirable summary of his researches into the perceptual processes, the fluctuations of attention, and the reaction times in epileptics. Experiments were made with respect to the "just noticeable" perceptions of sound and light in a number of epileptics, and he found that the results were most marked when fits were imminent, and were reduced when the patient was under the influence of bromide. He also exhibited diagrams of statistics relating to the mental and moral characteristics of epileptics as compared with normal people, and gave reasoned arguments for the conclusions to which he had arrived. It is noteworthy that exact psychological methods are being pursued by psychiatrists in the difficult problems of epilepsy and the psychoses, and no doubt much may be achieved in this direction towards a further elucidation of their origin. Dr. Wiersma traced the relationship of epilepsy to normal sleep; in the last-named condition some persons had a tendency to muscular startings before slumber. This habit, indeed, was frequently to be observed in children and animals. Hypnagogic hallucinations and nocturnal fears bore a close resemblance to epileptic equivalents, and similar phenomena were to be seen in disturbances of consciousness from other causes such as chloroform anæsthesia and alcoholism, which Dr. Wiersma regarded as links in the chain of the stage from epilepsy to the normal. He placed insistence on two phenomena which occurred in preoccupied or fatigued individuals and which appeared in aggravated form in epileptics—viz., "fausse reconnaissance" or the consciousness of having experienced present perceptions in the past, and "depersonalisation" or the failure to recognise actual perceptions with consequent disorientating effects. These might, no doubt, be assumed to arise through transient dissociation. Discussing epileptic characteristics, Dr. Wiersma endeavoured to establish a connexion with normal traits, and gave an account of an interesting series of percentage figures compiled from an investigation of 2523 normal persons. This was conducted by means of a list of 90 questions forwarded to Dutch practitioners, who were asked to send replies with respect to the mental "make up" of normal individuals well known to them. The questions included inquiries into capacity for comprehension, practical applications of common sense, breadth of mental vision, originality of ideas,

[1] Medical Practice in Africa and the East. Edited by Hugh Martin, M.A., and H. H. Weir, M.A., M.B., with an introduction by Stephen Paget, F.R.C.S. London: Student Christian Movement. 1923. 4s.

[2] Norsk Magazin for Laegevidenskaben, April, 1923.

verbosity, inclination to repetition, perceptive acuity, memory, mental reserve, wit, stubbornness, irritability, moodiness, self-satisfaction, conflict between thought and action, and so on. From this compilation Dr. Wiersma had divided the individuals into two main groups—viz., normally active persons and the absent-minded—the latter being prone to be inactive, losing grip on the outer world and its restraining influence on temptation, ill-at-ease with their fellow-men, and wandering in their thoughts. Dr. Wiersma's conclusion is that the absent-minded class represents transition between the normal and epileptic sections of the community. The fundamental nature of epilepsy he regards as due to an inherent failure adequately to assimilate impressions from the external world and holds that the convulsions, equivalents, and mental and moral characteristics associated with epilepsy are secondary and dependent phenomena.

THE MAUDSLEY LECTURE.

WHEN the Maudsley Lectureship was instituted in 1919 it was laid down that while the lecturer must have made contributions of well-recognised importance and value bearing on the knowledge of mind and its disorders, he might be of any nationality or of either sex. Sir James Crichton-Browne, who delivered the first lecture, dealt with the modern combination of laboratory and clinical work and the necessity of founding mental hospitals, and his lecture included a critical conspectus of psycho-analysis and psychotherapy. Last year Sir Maurice Craig took as his subject Some Aspects of Education in Relation to Mental Disorder, his key-note being Maudsley's remark that "there are not many natures predisposed to insanity but might be saved from it were they placed in their earliest days in exactly those circumstances and subject to exactly that training most fitted to counteract that innate infirmity." This year a distinguished visitor from the Dominions, Prof. C. K. Clarke of Toronto, was invited to deliver the lecture, of which we give an abstract on a later page of this issue. Prof Clarke dealt as was natural with the special needs and conditions of a developing country, starting from the unfortunate fact that the host of immigrants drifting from the Old World contain an undue proportion of defectives and mentally diseased persons. He described the work of the Canadian National Committee for Mental Training which he directs, frankly admitting that its first function is to educate people to a knowledge of the importance of having well educated psychiatrists abroad in the community—with the idea of keeping prevention of mental disorder before the public mind, and its second to scan school populations with skilled eye in the hope of forestalling the thousand-and-one tragedies seen to-day. Dr. J. G. Soutar, in proposing the vote of thanks to Prof. Clarke, welcomed his address for its helpfulness and hopefulness. The lecturer's enthusiasm had driven without stampeding him, and it might well be true that Canada could face psychological problems with greater freedom, being less hampered by tradition and entrenched in preconceptions than the mother country.

PRESERVATIVES IN FOOD.

FRESH point has been given to the need for further control of preservatives added to our daily food by the appearance of Dr. W. J. Howarth's report for the year 1922 on the health of the City of London. During that year nearly 1000 samples of food or drugs were submitted to the public analyst for examination, and of these more than 11 per cent. were found to be adulterated, the substances being very various, as the following list shows: Coffee essence, milk, borax, butter, British wines, margarine, tinned spinach, honey, gelatin, lemon curd, cider, Gregory powder, whisky, preserved cream, sauce, mustard, rum, cream, table jelly. The list shows a wide field of sophistication, although Dr. Howarth believes it to be not greater in the City area than elsewhere, his method of group-sampling tending to give higher figures than random sampling would. However, he regarded the situation as disquieting enough, as we have recently pointed out,[1] and the position fully justifies the plea of a proposed deputation to the Minister of Health, asking for the speedy introduction of legislation to notify and limit the presence of preservatives in food. This deputation, which included representatives of nine societies and a number of medical officers of health and others who have taken special interest in the matter of pure food, received the gratifying assurance that a Committee on the Use of Preservatives was in course of appointment. It is unfortunate that the only official action to be taken on the recommendations of the Departmental Committee of 1890 has been the issue of the Milk and Cream Regulations (1912 and 1917), prohibiting entirely the addition of preservatives to milk and limiting the amount of boric acid or hydrogen peroxide which may be added to cream, making obligatory an announcement of their presence on the label, and a further prohibition under the Foreign Meat Regulations of the importation of certain meat foods containing preservatives. But outside these there is a wide field for action. Laxity on the part of local authorities cannot, however, be entirely due to lack of powers, for the 5 administrative counties and 13 county boroughs, in which during recent years no sampling whatever has been done for the discovery of preservatives, have, as a matter of fact, possessed during that period full powers under the Milk and Cream Regulations. It is good fortune that just at this moment should appear a new edition (the seventh) of Bell's "Sale of Food and Drugs Acts"[2] which Mr. C. F. Lloyd has endeavoured to bring completely up to date, although, as he says, the law relating thereto has fallen into considerable confusion. The chemical notes of Mr. R. A. Robinson in the same volume have also been revised and enlarged.

A DIPLOMA IN BACTERIOLOGY.

BACTERIOLOGY is coming to occupy a large place not only in medicine and in public health but in many of the other arts and sciences. This theme formed the text of Sir Frederick Andrewes's address when opening last week the new bacteriological laboratories at Newcastle-upon-Tyne. It is significant that during the same week, at the annual meeting of the Court of the University of Manchester, approval was given to the institution of a special diploma in bacteriology. This is the first diploma in the subject instituted in this country, and the courses of instruction, which candidates will be required to attend before presenting themselves for examination, are designed to supply a thorough training in the general principles of the subject, together with advanced courses in one or more special branches. Graduates in medicine and in science of any approved university may enter for the course, and the syllabus has been designed to meet the requirements of medical graduates who wish to qualify for bacteriological posts, or to obtain a special knowledge of medical bacteriology, and also of graduates in science who desire to take up some branch of bacteriological work. The diploma will be awarded to candidates who have, after graduation in science or in medicine, attended the prescribed courses in the department of bacteriology and preventive medicine, under the general direction of Prof. W. W. C. Topley, over at least one academic year. The course of study comprises (*a*) courses of instruction in general bacteriology, including the morphology and physiology of bacteria and bacterial classification, the history of bacteriology, quantitative methods of bacteriological investigations, and elementary bacteriological chemistry; (*b*) special courses of instruction in two or more of the following subjects must also be taken: (1) bacteriological analysis of water, milk, food, &c.; (2) advanced bacteriological chemistry; (3) biometry; (4) parasitism, infection, and resistance; (5) epidemiology; (6) comparative pathology. The examination will consist of written papers on the general subjects

[1] THE LANCET, April 21st. [2] Butterworth and Co. 1923. 15s.

and on each of the special subjects selected, together with oral and practical examinations. A thesis to include a report on personal observations carried out in the laboratory must also be submitted. The reason influencing the decision of the University of Manchester to institute a diploma is that the increased importance of bacteriology in human and veterinary medicine, in agriculture, and in other branches of applied science makes it desirable that an adequate course of training should be available for those who wish to undertake bacteriological work of any kind. It is impossible to include in the ordinary medical curriculum more than the rudiments of this subject, and practically no provision is at present made for non-medical students, such as those studying biochemistry and kindred subjects, to whom a knowledge of bacteriological methods would often be of the greatest service. The new diploma may well meet the needs of a number of post-graduate students for whom no adequate provision has hitherto been made.

THE recent list of honours contains the name of Sir Thomas Horder, who becomes a baronet, and of Dr. Gould May, who receives a knighthood. We congratulate the recipients of these honours.

WE regret to announce the death of the veteran surgeon, John Chiene, Emeritus Professor of Surgery in the University of Edinburgh and consulting surgeon to the Edinburgh Royal Infirmary.

THE second part of the Registrar-General's Statistical Review of England and Wales for the year 1921 has now appeared. It will be remembered that in the new annual series a change in format was made from foolscap folio to royal octavo, and the statistical matter was regrouped into medical statistics and civil statistics, each being issued as soon as ready. Part II. of the tables, which now appears, deals with civil statistics (H.M. Stationery Office. 5*s*.). It contains those tables in the old series with a general demographic interest, along with the numbers of parliamentary and local government electors, recent census populations, and an appendix showing housing conditions and pauperism.

WE have received a copy of the Short History of St. Bartholomew's Hospital, 1123–1923, prepared as a gift-book for the delegates to the 800th anniversary of the hospital which is being celebrated from June 5th to 9th. In this beautiful book, which is beyond praise for its substance and manner, Sir D'Arcy Power deals with the Past and Present, the story being told largely in the language of the original records, and Mr. H. J. Waring with the Future. There are 52 illustrations and plans, several of them in colour. Articles have been incorporated on the Pathological Institute by Sir Frederick Andrewes, and on the Dispensary by Mr. J. L. Moore. The plans for the future have been drawn by Mr. T. A. Lodge. Much help in the preparation has been given by Mr. Geoffrey Keynes, from whom copies can be obtained, on application at the hospital, for 11*s*., including postage.

FELLOWSHIP OF MEDICINE.—A two weeks' refresher course in general medicine and surgery will be given at the North-East London Post-Graduate College (Prince of Wales's General Hospital), Tottenham, from June 11th to 23rd inclusive. The course will include demonstrations in clinical and laboratory methods with special demonstrations each Saturday at the North-Eastern Fever Hospital and the L.C.C. Mental Hospital respectively. A clinical lecture will be given every day at 4.30 P.M. A course of eight practical lecture-demonstrations on gastro-intestinal diseases of children will be given by Sir William Bayliss, Dr. Bernard Myers, and Mr. E. T. C. Milligan at the "Children's Clinic," Western General Dispensary, from June 11th to July 5th. In addition to other special courses announced last week, Dr. Gustave Monod will give a short course of clinical demonstrations (in English) on practical hydrology at the Thermal Hospital in Vichy, beginning on June 11th. Further particulars from the Secretary to the Fellowship, 1, Wimpole-street, London, W. 1.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

XXII.

THE TREATMENT OF RINGWORM.

THE subject of ringworm may best be dealt with under four headings: 1. Ringworm of the hairy regions, the scalp in children, and the beard region of men. 2. Ringworm of the nails. 3. Ringworm of the glabrous skin of the body and limbs generally. 4. The obstinate form of ringworm known as "Dhobi itch," especially as it affects the hands and feet.

Ringworm of Hairy Regions.

No treatment is efficacious that does not secure the complete shedding of the diseased hair, since no drug at present known is capable of penetrating the hair shaft in sufficient strength to destroy the fungus. Without going into detail as to the cultural varieties of ringworm that affect the hairy regions, it is important to separate two clinical varieties which, owing to their different effects on the skin, need different forms of treatment. The common clinical varieties all produce only a slight degree of inflammation, insufficient to cause shedding of the hair, and are associated with only slight redness, scaling, perhaps a little indolent pustulation and breaking of the hair so that it cannot be extracted with forceps. For these forms it is necessary to use artificial means to cause the hair to loosen and be shed in its entirety from the follicle. Though there are many applications that are capable of doing this in an uncertain proportion of cases, only two, the X rays and the croton oil treatment, may be relied upon in every case.

X Rays.—Where X ray treatment by an expert is obtainable it is the most satisfactory method, being cleanly, painless, regular in its action, and almost completely free from risk, but it cannot be urged too strongly that there is only a small margin of safety between insufficient radiation followed by incomplete fall of the hair and excessive radiation which may cause permanent baldness and even a severe dermatitis. This method should therefore be used only by medical men thoroughly trained in the use of X rays *for this purpose*. It should also be emphasised that the X rays have no deleterious effect on the fungus and are to be used simply as a means of converting hairy into hairless skin. Consequently during the shedding of the hair and for a period of four weeks afterwards the scalp should be kept constantly under treatment with a fungicide "guard" ointment, the best being, in in my hands: Acidi benzoici, gr. xxv.; acidi salicylici, gr. xv.; adipis lanæ, ʒss.; paraffinum molle, ad ʒi.

Two further points require emphasis. First, I am convinced after bitter experience that when ringworm is once established in the scalp it is wise to depilate the whole scalp by the overlap method of Adamson and not to attempt to treat infected areas only; otherwise the disease may crop up later on in other parts of the scalp and treatment then becomes much more prolonged and difficult. Secondly, it should be remembered that since X rays do not kill ringworm the falling hairs are likely to spread the infection and the patient should therefore be isolated.

Croton Oil.—Should X rays be unobtainable, shedding of the hair may be caused with certainty by means of croton oil treatment. Parents should be warned that this is a painful treatment. In this method one may use either the actual croton oil in very small quantities, painting a single drop over each patch, or one may use somewhat more freely an ointment consisting of one drachm of croton oil in an ounce of lard and rubbing this in gently. The finger used for rubbing in the ointment should be covered with a rubber stall, otherwise there is great risk of causing a whitlow on the finger. This treatment should be

carried out once a day and before rubbing in any fresh oil the parts should be thoroughly bathed with very hot water, any pustules present being opened with a sterile needle and the contents bathed out. After a variable number of days either a severe pustular folliculitis will be produced, or the whole area will swell up into a sort of œdematous cushion. In either case the hair will be so far loosened that it may be drawn entire with its swollen rootsheath. The case must be carefully watched, since if the process is carried too far, the formation of an abscess or sloughing of the skin results. Any appearance of whiteness of the treated skin is the earliest indication of a tendency to slough. In fortunate cases the whole of the affected hair will be shed together, but more frequently a few diseased hairs remain tightly set in the follicle, when each individual hair must be treated separately. A number 16 sewing needle is bent in a spirit flame to an angle of 45°, the angle being placed at a full quarter of an inch from the eye end. The pointed end is set in a needle holder or driven into a stick of soft wood. The eye end is dipped into neat croton oil and the affected follicle is gently catheterised therewith. The oval end of the needle is fine enough to find its way into the follicle, but not sharp enough to pierce the side unless undue pressure is used. The eye performs a useful function in carrying a charge of croton oil which becomes rubbed off as the needle descends into the follicle. The operation demands a considerable degree of skill. During the whole of the croton oil treatment the rest of the head should be kept thoroughly dressed with a "guard" ointment. The treatment is not entirely free from risk of permanent loss of hair, but this never occurs over large areas unless the oil is grossly over-used; on the other hand, it has the disadvantage that needling is almost always necessary to finish the case, and this demands expert skill.

Various Ointments.—Instead of the croton oil application an ointment consisting of equal parts of sodium chloride and vaseline may be used. This is rubbed in thoroughly once a day, after bathing the head with very hot water. The treatment is painful, perhaps even more so than the croton oil, but it is a little less dangerous. It is, however, much less certain to produce the desired fall of hair and sometimes sets up a spreading superficial dermatitis difficult to control and useless in the cure of the disease. Numerous other formulæ have been recommended. Of these, two have given me a reasonable proportion of successes. Acidi salicylici gr. xlv., ung. hydrargyri nitratis ad ℥i. rubbed in twice a day and washed out once a week will in favourable cases cause a non-suppurative, painless shedding of the hair resembling alopecia areata; in other cases, unfortunately, it causes a deeply pitting folliculitis and must be given up at once.

The second ointment is a modification of that already mentioned, so increased in strength as to have in some cases a depilating action: Acidi benzoici, ℥i.; acidi salicylici, ℥ss.; adipis lanæ, ℥iv.; paraffinum molle ad. ℥i. This ointment should be rubbed in twice a day; it causes some smarting to the child and may set up a temporary coryza in the person rubbing it in; I have never seen ill-effects from its use, but it is sometimes quite inefficacious.

Kerion Celsi.—The second type of ringworm of the hairy skin is that associated with intense œdematous and suppurative folliculitis, and is generally if not invariably due to the ectothrix fungus derived from domestic animals. It is known in this country as kerion celsi and on the continent as trichophytosis profunda. This type of the disease is self-curative since the inflammation loosens all the affected hair. All that is necessary is to draw these infected hairs from the inflamed follicles and then foment frequently with a solution of mercuric chloride (1 in 4000), keeping the rest of the scalp under a "guard" ointment.

The treatment of ringworm of the beard region is similar to that of the scalp, but the croton oil and sodium chloride treatments should not be used.

Ringworm of the Nails.

This disease is far more common than is generally recognised owing to the difficulty of demonstrating the fungus. Many methods of treatment have been recommended; the following method seems to me infinitely superior to the rest. The patient should be put under a general anæsthetic and all diseased nails gently but entirely removed, particular care being taken to remove any fragments that break off under the posterior nail fold. If, as is commonly the case, the nail bed shows extensive hyperkeratosis this should be gently scraped down with blade of a pair of scissors. After any bleeding has been stopped the whole nail bed should be dressed with acidi salicylici, gr. xx.; ung. chrysarobini ad ℥i., and some of the ointment should be worked as far as possible beneath the posterior nail fold. Pain is not, as a rule, great, but if necessary an opiate should be given for the first night. After-treatment consists in dressing the nail bed daily for *at least four weeks* with the same ointment. Should any nail relapse the treatment should be repeated, but this is not common.

Ringworm of the Glabrous Skin other than that of the Hands and Feet.

This form offers little difficulty as a rule. If seen early it may be painted with equal parts of tr. iodi and liq. iodi fort., or dressed with the mild benzoic and salicylic ointment given above or with ung. chrysarobini. If the ringworm is of the highly inflammatory kerionic variety I think it best to bandage it up with ung. chrysarobini.

Dhobi Itch of the Hands and Feet.

Owing partly to the immense thickness of the horny layer in these situations and partly to the resistant nature of the fungus this form is often desperately refractory to treatment. The nails are often infected and, if so, must be treated thoroughly or relapse is certain. Gloves, socks, and shoes must be disinfected as the fungus certainly resides in the two former and probably in the latter. The bath should also be scrubbed down with a disinfectant; Turkish baths should be avoided. I have had the highest proportion of permanent cures from the following treatment: In the morning after a bath all flaps of frayed horny layer are trimmed away and the roofs of any vesicles removed. The areas of infection are then well rubbed with a cotton-wool swab saturated with 10 per cent. solution of chrysarobin in equal parts of acetone and methylated spirit. This solution dries in a few moments; a pair of cheap cotton socks under the regular socks protects these from the chrysarobin. In the evening as much as possible of the chrysarobin is washed off with soap and water in order to avoid staining the bedclothes, and the 5 per cent. benzoic acid and 3 per cent. salicylic acid ointment is rubbed well in. Next morning this is washed off and the chrysarobin reapplied. This should be continued for four weeks unless chrysarobin erythema supervenes, when the solution must be stopped for a time and the ointment used day and night.

It is advisable in long-standing cases, which are common owing to mistakes of diagnosis, to continue with some alcoholic antiseptic for a long period after apparent cure. The formulæ which have served me best for this purpose are: (1) Hydrargyri perchloridi, gr. ii.; acidi salicylici, gr. xl.; sp. vini methylati (60 per cent.) ad ℥i. (2) Cupri nitratis, gr. xl.; acetone and sp. vini methylati, ää ℥ii.

Adamson has had good results by first painting with 3 per cent. solution of nitrate of silver and then when this has dried immediately painting with tincture of iodine. In my experience this method clears up symptoms quickly but relapse is frequent. Some American writers claim success from the soaking of the feet in a solution of potass. perman. (1 in 2000 to 1 in 500), but I have never been able to establish a lasting cure with this.

ARTHUR WHITFIELD, M.D., F.R.C.P.,
Physician to the Skin Department,
King's College Hospital.

Special Articles.

BRITISH EMPIRE CANCER CAMPAIGN: AN APPEAL.

CANCER, in spite of the advances which have been made both in diagnosis and treatment, is still the most common single cause of death in persons over 30 years of age and is becoming so in an increasing degree. During 1920, in England and Wales, nearly 43,000 persons over 30 and upwards died of cancer. In 1921, the last year for which the Registrar-General's figures are available, the corresponding number was 45,328. During that year, one in every seven deaths from the age of 30 onwards was caused by cancer.

We are still ignorant both of the causation and cure of cancer. Many other diseases have yielded their secrets to patient investigation and there is no reason to suppose that the problem of cancer will not eventually be solved. Yet thousands of suffering men and women, and those who suffer with them, are asking how long they must wait and if there is nothing that can be done to hasten a discovery which will bring relief to those whose outlook is to-day so hopeless.

The answer to this question is clear. The first step towards finding the cure of cancer is to discover its cause. To find that cause no effort must be spared. Every possible line of research must be diligently explored. More men must be set free to devote themselves wholly to research, and their work must not be hampered or prevented by want of money.

Much research work is being carried on and considerable advances have been made in the technique of operations designed to remove the disease in its early stages or retard its progress in more advanced cases. All honour is due to those who have done and are doing the work, but a vast amount still remains to be done. Impressed by the need for immediate action we have joined together to found a movement which will coördinate and support research on cancer throughout the British Empire.

This new concerted movement will be called the British Empire Cancer Campaign. It will be governed and directed by an Executive Council, the members of which will act as chairmen of small working committees each dealing with a separate aspect of the cancer problem.

Medicine, surgery, human pathology, chemistry, physics, radiology, animal and plant pathology, hygiene, and vital statistics will all be represented by committees whose work will be coördinated by the Executive Council acting, in fact, as a central clearing house. The Council is anxious to make it clear from the outset that it has no wish to interfere with the work already being carried out. Individuals and institutions now working on the cancer problem will be helped and encouraged and where practicable financially assisted.

In this way investigation can be carried out simultaneously along many lines and the results of these inquiries will be brought into the common stock of knowledge. A discovery in any one branch will be made known to all, and may lead to discoveries in other branches. It is in this coördination of effort that our most confident hopes are placed.

No one can say with certainty that we shall succeed in our quest to find the cause of cancer, but a movement so broad must inevitably advance the knowledge which we have of this disease and every step forward brings us nearer to our goal.

The British Red Cross Society has placed its organisation and machinery at the disposal of the Council of the Campaign, and a generous donor has already given a sum sufficient to cover the preliminary expenses of this appeal. All future contributions will therefore be expended in encouraging, assisting, organising, and administering systematic research and treatment on a scale that has hitherto been impossible.

To do this a large sum of money will be needed and we appeal with confidence to the British public in the United Kingdom and in the Dominions and Colonies overseas. During the war we had ample evidence of the capacity of this Empire for united and intensive effort, and in no field was it more effectively shown than in the relief of suffering and the prevention of disease. Is it too much to hope that the same spirit will animate our people when they are called upon to wage war against an enemy that is in their very midst? We plead with all earnestness that we may be given the means wherewithal to carry through the task which we have set ourselves to accomplish and thus to bring relief and hope to those whose lives are now darkened by suffering and despair.

The fund will be administered under the direction of a strong Finance Committee. Cheques should be made payable to the British Red Cross Society, crossed "British Empire Cancer Campaign" and sent to the Hon. Sir Arthur Stanley, G.B.E., C.B., 19, Berkeley-street, London, W. 1, or to Lloyds Bank, Ltd., 71, Lombard-street, or to any of their branches or agencies at home or abroad.

ATHLONE.	F. L. HOPWOOD.
JOHN BLAND-SUTTON.	THOMAS HORDER.
NAPIER BURNETT.	ROBERT KNOX.
DAWSON OF PENN.	G. LOCKER LAMPSON.
F. E. FREMANTLE.	J. P. LOCKHART-MUMMERY.
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RICHARD GARTON.	J. BEAUMONT PEASE.
CHAS. GORDON-WATSON.	BERNARD SPILSBURY.
R. A. GIBBONS.	ARTHUR STANLEY.
ALFRED GREENWOOD.	WILLIAM WILLCOX.

All communications should be addressed to the hon. secretary, Godfrey Locker Lampson, Esq., M.P.

19, Berkeley-street, W. 1, May 30th, 1923.

THE CONSTANTINOPLE BOARD OF HEALTH.

BY F. G. CLEMOW, C.M.G., M.D.,

FORMER BRITISH DELEGATE TO THE BOARD AND PHYSICIAN TO H.M. EMBASSY, CONSTANTINOPLE.

PART II.*—THE WORK OF THE BOARD.

THE work done by the Constantinople Board of Health may best be understood by grouping it under three main headings: (1) the Mediterranean and Black Sea sanitary service; (2) the Red Sea sanitary service, the Mecca Pilgrimage, and the Hedjaz Railway; (3) the Turco-Persian Frontier sanitary service and the Shiah pilgrimage and transport of dead bodies. This division of the work was indeed formally recognised, both administratively and financially, almost from the first; and in the Board's balance-sheets the receipts and expenditure of each of the three "services" were, till the end, set forth separately. The ideal aimed at was that each "service" should, as far as possible, be independent and financially self-supporting; and in the earlier years the finances of the three were not only kept separately, but it was even laid down that a deficit in one was not to be covered by a surplus in either of the others, but was to be borne by the Turkish Government. In later decades, however, the "fusion" of the three services was formally admitted, and though the figures for each continued to appear separately, the totals were added together and a deficit or surplus established in the Turkish sanitary service as a whole.

In each of the three services the Board administered a series of lazarets, disinfecting stations, and sanitary offices. The latter existed at practically every port of any size around the coasts of the Turkish Empire and at suitable places along the land frontiers. The maritime offices were charged with the interrogation of ships, the examination of bills of health, the collection of sanitary dues, the granting of sanitary visâs, and the reporting to the central administration of any event of sanitary importance,

* Part I. was published in THE LANCET of May 26th, p. 1074.

such as the occurrence of plague or cholera on a ship or the outbreak of infectious disease in the port or its neighbourhood. In like manner the lazarets and disinfecting stations were placed at suitable intervals along the coasts or on the frontiers.

The Mediterranean and Black Sea Sanitary Service.

There were five lazarets, of different size, in this service—those of Sinope, on the northern shores of Asia Minor; Kavak (or Monastyr-Aghzi), near the northern end of the Bosphorus; Touzla, on the Sea of Marmora; Clazomene, near to Smyrna; and Beirût, on the Syrian coast. In addition there were small disinfecting stations, well furnished with steam stoves, at Jaffa and Rhodes. Of these only the first four now remain to Turkey. In former years there was something in the nature of a lazaret at Nagara, on the Dardanelles, but for many decades it had practically ceased to exist. It will be observed that, while the coasts of Asia Minor, Syria, Palestine, and the Straits (Bosphorus, Sea of Marmora, and Dardanelles) were sufficiently well supplied with lazarets and disinfecting stations, there were none on the shores of European Turkey—either on the Ægean or Adriatic side—nor on those of African Turkey (Tripoli and the Cyrenaica).

The lazaret of Sinope was intended for the reception of pilgrim ships or other large ships subject to measures coming from any port in the Black Sea, and destined for Constantinople or any port south of the Straits. It was a large and straggling establishment, but possessed a good modern disinfecting block, provided with three stoves. When visited in 1908 the rest of the buildings were in bad condition; during the war it was occupied by Turkish troops and this has, I understand, all but completed its ruin. It was formerly capable of lodging about 1200 persons in quarantine.

The lazaret of Kavak was intended to be only a secondary establishment, a sort of "succursale" of Sinope. It has a fairly good disinfecting pavilion, but can only lodge some 250 persons at a time. The question of transfering this lazaret to a better site in the Bosphorus, where a large one could be built to replace the two lazarets of Sinope and Kavak and deal with all arrivals from the north, has for some time been under consideration. The protection of the "Straits" by means of such an establishment or by other means is, indeed, of primary importance to the other countries of Europe. The Straits and the Suez Canal constitute two great waterways by which Europe is constantly threatened with the introduction of epidemic diseases from the East. In the past the majority of ships from the Black Sea subject to measures, and especially of pilgrim ships, came from the Russian ports of that sea. In later decades they brought large numbers of passengers and pilgrims not only from all parts of Russia—including European Russia, the Caucasus, Central Asia, and Siberia—but also from other Asiatic countries. The development of railways in these regions led to a vast increase in the movement of pilgrims and traders by this route of the Black Sea and the Straits. In European Russia there was a fairly complete network of railways; these were linked up with the Trans-Siberian and Transcaspian lines. The latter had extensions to Samarkand, and the provinces of Semipalatinsk, Semiretchinsk, and Ferghana. On the west of the Caspian it was continued in the Transcaucasian railway from Baku to Batoum, with an important branch from Tiflis to Julfa and Tabriz in Persia. Already these lines are linked directly or indirectly with the Bagdad railway, the Hedjaz railway, and the lines of Asia Minor. If the movement on these various routes was great in the past, it will unquestionably be still greater in future.

The Touzla lazaret, situated on the Gulf of Ismidt (Sea of Marmora), is a small establishment, and should perhaps be grouped with the disinfecting stations rather than with the lazarets. It has an excellent disinfecting pavilion, a small hospital and laboratory, but no houses for lodging persons subject to detention in quarantine.

The Clazomene lazaret, on the island of that name in the Gulf of Smyrna, was a fairly large and good lazaret, possessing a good disinfecting block, hospitals, and houses for lodging some 2000 persons at a time. It is reported to have suffered much damage during the war.

Finally, identical statements may be made in regard to the Beirût lazaret, save that here there was accommodation for some 1500 persons only. The two disinfecting stations of Jaffa and Rhodes were each provided with a quite excellent disinfecting pavilion, but with nothing else. To complete this brief sketch of the Mediterranean and Black Sea sanitary service, it must be added that there were as many as 84 sanitary offices, "principal" and "subordinate," in different Turkish ports; of these only 31 were on territory that now remains Turkish.

In a concluding article the financial arrangement of the Board and the sanitary organisation for the future will be considered.

(To be concluded.)

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Early Treatment of Œsophageal Injuries by Bougie.

IN a paper recently read before the Vienna Medical Society Dr. Salzer discussed the best methods of treating the condition, frequently found in children, of œsophageal strictures produced by swallowing caustic substances. Three years ago he had reported to the same society that his routine treatment was to apply a bougie very early after the injury, and he had then shown a dozen cases. He had since had 24 more cases of such injuries under observation. He used to apply a bougie as soon as the acute symptoms had subsided—i.e., on the third to sixth day after the injury—not, as had hitherto been customary, after a few weeks, when cicatricial stenosis was already well established. Of the 24 cases newly reported 21 were cured and 2 died before treatment could be commenced; one boy, aged 3 years, died on the seventh day after four treatments, post-mortem examination revealing pneumonia, but no perforation of œsophagus or stomach. Thus, out of 37 cases observed, 33 were cured, and 1 died during treatment, but not owing to it. In Hungary, Dr. Bokag and Dr. Erdelyi had treated 116 children on the same principle, with excellent results. Only 5 died, but not directly owing to the treatment. In adults the same principle of very early application of a bougie had also been used in the Vienna surgical clinics; the four cases seen were all cured. Dr. Salzer strongly urged practitioners to resort very early to this safe and trustworthy method.

New Professor of Pathological Anatomy at Vienna.

The chair of pathological anatomy in the University of Vienna, which has been vacant for half a year, has now been filled by the appointment of Prof. R. Maresch, who is a pupil of Paltauf, and has held, amongst other posts, that of prosector of the City of Vienna Hospital. Prof. Maresch has a wide reputation as a teacher and research worker, his main interests being bacteriology and tumours; he will take up his duties during the summer.

Treatment of Severe Hæmorrhage by Blood Transfusion.

Prof. Victor Blum recently showed to the Surgical Society of Vienna a patient, aged 65, who had suffered from prostatic hypertrophy. He had been passing about 6 litres (about 12 pints) of urine per day, and had suffered from severe thirst; a diagnosis of diabetes had been made elsewhere, and treatment instituted accordingly. Only after some time had elapsed was the condition properly diagnosed as severe insufficiency of the kidneys, over-distension of the bladder, and prostatic hypertrophy. Operation

consisted in suprapubic prostatectomy after slow evacuation of the bladder. Severe hæmorrhage gave much trouble, but was twice controlled; on the thirteenth day blood again appeared in the urine, in such profusion that the patient became quite pulseless. All known methods of stopping the hæmorrhage were tried, and finally resort was had to blood transfusion by means of the Öhleckers apparatus. The patient's son served as donor, 750 c.cm. being transfused with excellent results. The pulse returned, the patient rapidly regained normal colour, and the bleeding stopped at once. Except for a severe rigor after half an hour, with a sudden rise of temperature, the patient made an uninterrupted recovery, and is now practically cured of all his troubles. Prof. Blum strongly advocates the use of transfusion for all cases of severe bleeding in surgical and non-surgical cases, and points out that whilst in Central Europe this method is not much used, it is quite common in the United States, especially as a preparatory measure for prostatectomy in weak cachectic old men with renal insufficiency, in cases of anæmia due to acute nephritis, and in treatment of urosepsis and of puerperal sepsis. In the discussion following the demonstration, Prof. A. Eiselsberg, in whose clinic the apparatus is working, offered its use to any member of the profession requiring it, together with the help of trained men capable of handling the rather intricate mechanism.

Statistics of Population in Leading European States.

An interesting review of problems of population was recently published by the Austrian Statistical Board. From the figures given the population of the chief western countries at the beginning of the nineteenth century was as follows: France (comprising about the same territory as at present) 27 millions; England, about 16 millions; Germany, about 22 millions; Italy, 18 millions. After the Napoleonic wars—i.e., in 1816—France had a population of 29½ millions and Germany 25 millions. Fifteen years later France was left behind with 36·8 against Germany's 42·7 millions. In 1913 the proportion was Germany 67, France 39·8 millions. At present Germany, although she has lost, by the terms of the Peace Treaty, over seven millions of German-speaking people, is already making up the loss; France, in spite of having regained Alsace-Lorraine, has to-day only 39½ millions. Comparison of the populations of Britain and France shows that in 1801 France was 60 per cent. ahead; in 1881 the figures were: the United Kingdom 35 millions, France 37 millions; and in 1922 the United Kingdom had 48 millions, France 39½ millions. Comparing the populations of France and Italy, we find that in 1801 France had 50 per cent. and in 1891 25 per cent. more population than Italy, and still led by 12 per cent. in 1913; but in 1922 Italy had passed the 39th million, and in a few years' time, with her much quicker rate of increase, she will leave France behind. From the figures quoted it must be inferred that the natural increase of the French nation has been restricted for at least a century.

Epidemic of Measles in Vienna.

The statistics of the Vienna Board of Health show that there is a recurrence of measles, in epidemic form, every three years in the city. Acting on this knowledge, the authorities have already made arrangements to meet this year's expected demand for hospital beds for infectious cases. Measles is not notifiable in Vienna, and very often no medical help is summoned to a case; thus infection in the schools goes unchecked, as when a child is ill its brothers and sisters frequently continue to attend. The Board of Health has notified the public that the increase of measles is a regular occurrence, giving no cause for undue alarm.

Increase of Cocainism.

Cocainism has spread to such an extent in Vienna that the authorities have had to institute stringent repressive measures. Apart from action against illicit traffic in the drug, the police have ordered that persons found to be addicted to the habit shall be detained and, if possible, be sent to hospital. Apothecaries and druggists are instructed to refuse to dispense cocaine in powdered form, only solutions being now permitted. Each prescription containing cocaine must bear the instruction "no repetition." Two recent suicides of well-known persons addicted to the habit have aroused considerable discussion in the city.

May 17th.

ROUMANIA.

(FROM OUR OWN CORRESPONDENT.)

Spread of Typhoid Infection by the Hands.

Dr. Schmidt, of Marosvasarhely (Transylvania), in a recent lecture on the different ways in which typhoid infection is conveyed, stated that in his opinion the dangers of impure water had been greatly exaggerated. He suggests that the principal means of infection is the hands of patients recently recovered from the disease—bacillary carriers who still have bacilli in their stools. Unless the hands are washed after each defæcation they are liable to deposit the organisms on everything they touch, and patients whose daily work necessitates the handling of foodstuffs thus do great harm. Dr. Schmidt urged the establishment of control stations for convalescents in the large towns of Transylvania, where 1000 to 1200 persons die of typhoid yearly. He also advised the display of explanatory circulars in public places and the giving of dictation exercises on the subject in the schools, as was done some years ago in France.

Leprosy in Herzegovina.

Dr. Vokurka, who has lately returned from a study of leprosy in Herzegovina (Jugo-Slavia) found the disease to be very sparingly distributed over the latter country and over Bosnia, both of which countries formed, before the war, parts of the Austro-Hungarian monarchy. Dr. Vokurka surmises that it was probably a new disease when first recognised in Serajevo some 150 years ago, since which time it has gradually extended over the whole country. The principal point of interest in these observations is the confirmation which Dr. Vokurka has found of his theory that leprosy is due to deficient alimentation—in this instance to the consumption of badly-cured mutton. This finding is in harmony with that of the late Jonathan Hutchinson, who traced leprosy in South Africa to the consumption of badly-cured salt fish. Dr. Vokurka considers, however, that the evidence is in favour of the disease being sometimes communicated from man to man, not by direct contagion, but by the consumption of food handled and contaminated by leprous persons. As this method of transmission is possible only under circumstances of the grossest hygienic neglect, the incidence mainly among the poorer classes is explained. Dr. Vokurka favours legislative control of the sale of food, education of the public as to the methods of transmission, and establishment of leper homes for use by victims of the disease during the infectious period.

The Spread of Venereal Diseases.

The prevalence of venereal diseases per 1000 men in the Transylvanian army (eastern group of the Roumanian army) was 73·6 in 1921 and 61·0 in 1922. The incidence of syphilis is decreasing, owing to the fact that since 1920 soldiers have been examined every week by venereal specialists; if any disease is found the man is sent to a special hospital until radically cured. Those suffering from syphilis are summoned every three months to undergo a course of treatment during the first year afterwards; and during the next two years they are summoned to undergo a blood test every six months. If in the meantime the soldier returns to civilian life, he is registered by the parish medical officer and must present himself at the nearest venereal hospital for a blood test every six months.

May 14th.

UNIVERSITY OF DURHAM COLLEGE OF MEDICINE, NEWCASTLE-UPON-TYNE.

OPENING OF NEW BACTERIOLOGICAL LABORATORIES.

NEW laboratories built by the College of Medicine to accommodate the department of bacteriology were opened by Sir Frederick Andrewes, F.R.S., professor of pathology in the University of London, on May 25th. There was a large attendance, composed partly of members of the profession residing in Newcastle and the neighbouring counties, but including, also, many men prominent in the affairs of the district, as well as the principal and heads of departments of Armstrong College, and the President, staff, and students of the College of Medicine. The guests were received in the King's Hall of Armstrong College by Sir David Drummond, President of the College of Medicine, and after tea the company adjourned to the physics theatre to hear the addresses. When Sir Frederick Andrewes had completed his address, Sir David Drummond presented him with a key suitably inscribed, and asked him to open the building.

History of the New Department.

Sir David Drummond, after offering a hearty welcome to Sir Frederick Andrewes and the guests, explained why a new building was found to be necessary, and why it had been erected upon a site in connexion with Armstrong College rather than upon the site at present occupied by the College of Medicine. Accommodation in the latter had fallen short of the requirements, especially in so far as the more technical and practical sections of the curriculum were concerned, and the pressure had been felt most acutely in the department of bacteriology. The council of their sister college, Armstrong College, had made the liberal and magnanimous offer of a site adjacent to the agricultural department, and further offered to advance the capital necessary for the erection of the building, stipulating only that they should be consulted as to the design and structure of the building so that it might readily be converted to other needs when the College of Medicine found themselves able to erect their new college upon the site recently acquired next to Armstrong College. This generous offer had been accepted by the Council of the College of Medicine with thankfulness. The University of Durham and the City of Newcastle-upon-Tyne had thus acquired a most important educational development in the shape of what he ventured to hope Sir Frederick Andrewes would find to be one of the best bacteriological departments in the country.

The Place of Bacteriology in the Arts and Sciences of the Present Day.

Sir Frederick Andrewes spoke of the place which the science of bacteriology had now come to occupy, not only in medicine and in public health, but in many of the other arts and sciences. He outlined the history and development of bacteriology from the time when the great Dutchman, Leeuwenhoek, often spoken of as the "father of microscopy," first distinctly saw the organisms which we now know as bacteria. This was nearly 250 years ago, and to Leeuwenhoek, and, indeed, to his successors for more than 150 years, they remained merely objects of interest and wonder. It was not until the rise of chemistry that the nature of fermentation could be understood, and then the microscope revealed that the mysterious substance which, when added to the fermentable material, initiated the chemical changes, owed its power to the presence of micro-organisms. An even more important impulse was given by the discovery of the relation of micro-organisms to infective disease. The things that kill a man touch him more closely than the cheese he eats or the beer he drinks. As early as 1835 a silk-worm disease known as "muscardine" was found by Bassi to be due to a fungus, and in the following decade the parasites of favus and ringworm were discovered. The first bacterial disease to be identified was anthrax. The infecting agent was seen in the blood of infected animals by Pollender in 1849, and by Davaine in 1850.

Of all the great names which stood out in the nineteenth century that of Pasteur must take the first place in connexion with bacteriology. It was a happy omen that these new laboratories should be opened in the very week when the 100th anniversary of that great investigator's birth was being celebrated. For his chief claim to immortality was not that he was a great chemist—as he was—but that he founded a new science. Pasteur transformed bacteriology into an experimental science. He was the first to cultivate bacteria artificially and to bring them into the domain of the laboratory. The second great name in bacteriological science was that of Robert Koch, who devised the means of culture on solid media and enabled us to make certain of the purity of our growths. No difficulties seemed too great for this man to overcome, as was well shown by his discovery of the cause of tubercle.

After sketching the development of bacteriology on the medical side, Sir Frederick Andrewes pointed out that the greatest service which the bacteriologist had rendered was in focusing attention on the human carrier of infection. We now knew that many human beings might become so far immune as to be capable of harbouring and, what was worse, of disseminating the infecting agents of certain diseases.

But in spite of the attention which their importance had attracted, probably not one in a hundred of the existing species of bacteria had any relation to disease. In many industries it had proved possible to utilise the chemical powers of bacteria. Nature had been found to work more economically than art, and the chemistry of these minute organisms was more subtle than that which the laboratory could accomplish. The manufacture of lactic acid and acetone were examples. It was in agriculture and allied industries that some of the most important applications of bacteriology were to be found. In the front rank stood the discoveries of the nitrogen-fixing powers of certain bacteria, especially well seen in the root nodules of leguminous plants, whereby the importance of these in the rotation of crops received a rational explanation. Milk was a particularly favourable medium for the growth of bacteria, so that the whole dairy industry was deeply concerned in questions of bacteriology. Bacteriology was, in fact, a subject of high industrial importance, fully worthy of careful study even if it had no application to medicine.

Sir Frederick Andrewes concluded with a word on the teaching of bacteriology. He said: "It must be taught in two stages. First must come the academic study of its general principles. For this purpose the situation of the laboratories opened to-day seems admirably adapted, and the University may congratulate itself on such provision for the teaching of the subject. The second stage of teaching can only be carried out effectively in relation to the special arts and sciences to which bacteriology may be applied. It would, I think, be a misfortune if the establishment of the central teaching of bacteriology in this institution led to any divorce from medicine, and I trust it may have the contrary effect. The medical aspects of bacteriology can only be studied to advantage in close relation with medicine itself."

The Building and Equipment.

The new laboratories are situated on high ground to the north of the city, adjoining the department of agriculture of Armstrong College. The building comprises 3712 superficial feet, occupies two main floors, with a basement below and accommodation for animals on the roof. Ventilation is effected on the exhaust system, the stale air being extracted by an electric fan, while fresh air is admitted through inlets placed behind the radiators as well as through Sheringham valves at a height of 5 feet 6 inches from the floors. The building is heated by steam on the atmospheric principle. On one side of the hall is a

chemical laboratory, and on the other an office of similar size. The rear part of the ground floor is occupied mainly by a laboratory, 47 ft. by 24 ft. by 14 ft., affording accommodation for about 50 students. On this floor also are three small laboratories and a dark room for photography. Around the first floor landing are arranged five laboratories; one, measuring 34 ft. by 22 ft. by 15ft., is for sterilisation and preparation of culture media, with a staircase giving access to the animal rooms above. The working benches are made of pitch pine, covered with linoleum, while incubators and water-baths stand on tables covered with asbestos sheets. In place of the usual porcelain sinks a lead-lined trough, coated with bitumen, runs the whole length of the back of the benches. The animal houses open on to a flat asphalt roof, from which an outside lift runs to the ground level, thus avoiding the necessity of carrying dusty materials through the building. The architects are Messrs. Knowles, Oliver and Leeson, of Newcastle.

CONGRESS OF THE ROYAL INSTITUTE OF PUBLIC HEALTH.

(*Concluded from p. 1078.*)

FRIDAY, MAY 18TH.

ON the second day attention was given to venereal diseases. In the State Medicine Section this subject was ably dealt with by Colonel L. W. Harrison, who described the clinic at St. Thomas's Hospital by means of a model. He emphasised the fact that many of the clinics are not yet efficient, and that while this is so, it is no good talking about notification. He also stressed the fact that we are now in a position to abolish congenital syphilis by the treatment of the expectant mother, if the various departments would all work together. In the Women and the Public Health Section notification was discussed, the Canadian system of notification was mentioned, and the need for providing treatment at ante-natal clinics for venereal diseases.

Mr. S. Fisk dealt with the prophylactic treatment of dental caries.

A vigorous discussion took place on the small-pox and vaccination question, opened by Dr. C. Killick Millard. Dr. Millard pointed out that small-pox had lately become a much milder disease, in spite of the neglect of vaccination, and that we are now in a position to deal with outbreaks much more efficiently than formerly. He urged that the damage done by wholesale vaccination was now more than that done by small-pox itself; he advocated an alteration of the vaccination laws and faith in emergency vaccination. Most of the speakers in the discussion opposed these views.

In dealing with the question of vocational unfitness Mr. Cyril Burt, D.Sc., pointed out that a considerable proportion of juvenile delinquency is due to the fact that the delinquents are set to work for which they are not suited. The work may operate harmfully by making too little or too great a demand on the intelligence of the worker.

MONDAY, MAY 21ST.

On the resumption of work by the sections on Whit Monday great interest was taken in the discussion on birth control. Mrs. Mary Scharlieb strongly opposed artificial methods. Mrs. Hodson, of the Eugenics Education Society, put forward the plea that carefully used birth control had become necessary to prevent the propagation of the unfit. We had taken upon ourselves as a community to prevent natural selection and had made ourselves responsible for putting something in its place. Dr. N. Macfadyen, of Letchworth, pleaded for the impartial consideration of the whole matter by the medical profession. Mr. H. V. Roe, of the Society for Constructive Birth Control, mentioned the report by the General Federation of Trade Unions on the excessive sickness in Dundee, in which were instanced many cases of excessive child-bearing. For example, 11 women had given birth to 78 children, and these had a death-rate of 62 per cent. Many of the audience must have come to the conclusion that intelligent methods of birth control have no place in a scheme for preventing the propagation of the unfit, but that for such a purpose the choice lies between sterilisation and segregation for life.

In the State Medicine Section Dr. H. P. Newsholme opened a discussion on Diet Deficiencies in Relation to Public Health, giving a useful survey of the subject. He pointed out that many of the recent changes in our food were due to urbanisation and the necessity for having food that is transportable and will keep. We cannot, therefore, go back to the old style, but we can compensate and correct for what the new knowledge shows to be errors. Dr. H. Scurfield, after mentioning that the vitamin research confirmed the wisdom of our forefathers in valuing milk, green vegetables, and fruit, said he had been much struck by the way the knowledge of vitamins was being adapted for poultry-rearing.

Dr. J. R. Kerr, of St. Helens, in an interesting paper on the American Industrial Doctor, outlined the progress in the provision of medical and surgical care for employees in America during the last half century, and showed that the Pilkington Special Hospital of St. Helens was doing this work on a large scale.

Mention must be made of a few of the interesting papers read before the Section for the Navy, Army, Air Force, and Tropical Diseases. Sir Leonard Rogers called attention to the intimate relationship between leprosy and rainfall. He emphasised the importance of segregation in self-supporting colonies, and concluded with some suggestive remarks on the treatment of the disease. Dr. W. A. Lethem, in a most interesting paper, produced evidence to show that the spread of bubonic plague among persons in the same house in this country was probably through the medium of *Pulex irritans*, and he contended that disinfestation in such cases was of even greater importance than rat destruction. The question of malaria was discussed in communications from Prof. J. W. W. Stephens and Lieut.-Colonel C. W. Holden, R.A.M.C., the former dealing with the treatment of the cases in England, and the latter with the prevention of the disease in the field. The two papers were taken together and gave rise to an interesting discussion on the place of quinine and other drugs in treatment and prophylaxis. Wing-Commander H. E. Whittingham and Flight-Lieut. A. F. Rook described their work on the prevention of phlebotomus fever in Malta. The life-cycle of *P. papatacii* was shown in a series of diagrams and exceptionally beautiful microscopic specimens. The various methods of protection, treatment of buildings and roads, nets, cresol sprays, and fans, were dealt with and their efficacy demonstrated by statistics. The pathology and treatment of various forms of gas poisoning in war was the subject of a communication from Surgeon-Commander Gerald R. McCowen. Major A. T. Frost, R.A.M.C., read a paper on the interaction between syphilis and the ductless glands. He discussed the rationale of potassium iodide in this disease and quoted very encouraging results from the exhibition of thyroid extract in preventing relapse.

UNIVERSITY OF PARIS.—A "cours de perfectionnement" on Recent Ideas concerning Diseases of the Liver, Bile-ducts, and Pancreas, and Diabetes, will be held from July 2nd to 13th in the Amphithéâtre Trousseau, Clinique Médicale de l'Hôtel Dieu. The course will comprise 32 lectures, and will be under the direction of Prof. Maurice Villaret, who will be assisted by Drs. Okinczyc, A. Baudouin, Herscher, Chabrol, Lippmann, Jomier, Brin, Saint Girons, Coury, Benard, Dumont, Deval, Tissier, and P. Descomps. Fee for the course, Fr.150. Foreign medical men and students in the Faculty of Medicine of the University will be admitted. Further information may be had on application to the Secretariat of the Faculty (Guichet No. 3).

Correspondence.

"Audi alteram partem."

THE CAUSE OF DEATH IN ANGINA PECTORIS.

To the Editor of THE LANCET.

SIR,—I cannot leave the very courteous letter of Dr. Walter Verdon, in your issue of May 26th, unacknowledged. But I have no objection to make to the substance of Dr. Verdon's arguments. It seems to me convenient to confine the name angina pectoris to cases of organic disease, and to classify the functional cases with their different phenomena and issues under some other name, or some qualification of the name. I have remarked in my book on arterial diseases, as Dr. Verdon says, how often in cases of true angina death occurs in the slighter seizures. In these cases the heart is very degenerate, but the severer pains seem to arouse more systemic resistance.

I am, Sir, yours faithfully,

Cambridge, May 26th, 1923. CLIFFORD ALLBUTT.

THE CLAIMS OF NON-PANEL PRACTITIONERS.

To the Editor of THE LANCET.

SIR,—In view of the probable alteration of the Insurance Act this year, I should like to bring forward the claims of two classes: (1) Those members of the medical profession who held to their word at the time of the agitation in 1911, and (2) those members of the public who prefer to pay for their attendance privately, although also compelled to pay panel contributions. The promise of the author of the Act was that such patients should have full choice of doctors, even if they were not on the panel, and patients who wished to choose such doctors could do so under the contracting-out clause with its pooling scheme. However, by the action of the local insurance committees these conditions have been rendered a dead-letter. Would it not be a simple act of justice to have these wrongs remedied in the impending changes?

Practising as I do in a town of industrial people, I have felt that the numerous patients who still hold to me, in spite of being allotted a panel doctor, are worthy of consideration, and that to them contracting-out on reasonable terms should be allowed without unnecessary restrictions in the way of forms and files. I can see no reason why panel doctors should object to this if they recall that the non-panel men still stand where they once stood before the débâcle.

I am, Sir, yours faithfully,

RAYMOND H. SHAW, M.S., M.B.,

May 25th, 1923. Senior Surgeon, Great Yarmouth Hospital.

A TREATMENT FOR TAPEWORM.

To the Editor of THE LANCET.

SIR,—With reference to the article on the Treatment of Intestinal Worms in your issue of April 14th, I desire to draw attention to a treatment for tapeworm which will, I think, be found on trial to give consistently satisfactory results.

Some years ago the writer was called upon to treat a case of very intractable tapeworm (saginata) infection, which had existed for over a year, and had survived three vigorous treatments with freshly prepared emulsion of ethereal extract of male fern, in addition to one with pelletierine tannate, the whole worm on each occasion, with the exception of the head, having been evacuated en bloc. On consideration it seemed to me that in such cases, after the expulsion of the bulk of the worm with male fern, instead of the usual policy of wait-and-see, additional measures should at once be instituted with a view to inhibit the growth of further segments from the retained head. Accordingly, immediately after a fourth treatment with male fern which, as before, removed all the worm with the exception of the head, 15 gr. of beta-naphthol in tabloid form were administered to the patient each morning, for ten consecutive mornings, on an empty stomach along with a cup of tea, no food being allowed until lunch time. The result was altogether satisfactory, no trace of the worm ever after being seen.

This treatment has been tested both by myself and others in many subsequent cases, and in no instance has it been known to fail.—I am, Sir, yours faithfully,

JOHN W. TOMB, M.D., D.P.H.

Mines Board of Health, Asansol, Bengal, India, May 10th.

THE LANGUAGE OF MEDICINE.

To the Editor of THE LANCET.

SIR,—The reform of the English in which much medical literature is written would be a task of terrifying magnitude, involving, as it would, nothing less than the reform of the writers, but I should like to enter a protest against one common offence, the employment of hybrid compound words, such as "peri-aqueductal" and "hypo-somnia." What would be thought of the education of a writer who dealt in such impossible barbarisms as "Tête-Schmerz" or "Doppel-entendre"? Yet it is only general ignorance that makes the former more tolerable than the latter. If it is beyond our power to express our meaning with the assistance of Greek or Latin without employing impossible compounds, why should we not make a serious effort to say what we have to say in English? The language possesses a splendid vocabulary and an august literature, and the moderate labour involved in writing in a manner worthy of both these great possessions would result in making our medical journals much better reading, and would be of very real benefit to the writers.

I am, Sir, yours faithfully,

East Grinstead, May 21st, 1923. F. C. POYNDER.

DIETETIC TREATMENT AFTER GASTRO-ENTEROSTOMY.

To the Editor of THE LANCET.

SIR,—I was much interested in reading in THE LANCET of March 31st (received yesterday) Sir Berkeley Moynihan's interesting address on the treatment of duodenal ulcer, in which he sets out the menu which he gives to all his gastric and duodenal cases after operation. In this he mentions "meat cooked a second time," "boiled milk," and "the teeth and gums and the inside of the cheeks should be brushed with care two or three times daily."

As to the first, I prefer meat once "cooked to a turn"—i.e., juicy tender flesh which dissolves in the mouth during mastication. I consider over-cooked meat—all the sap remaining in the oven—on a par with cooked timber, absolutely useless as a food; and after long experience in this land of meat-eating I have been forced to the conclusion that it acts as a foreign body and as such is a fertile source of cancer of the stomach. In reference to the second, I happen to be a believer in the dictum "boil milk and you spoil milk," and consequently I order fresh milk when it can be obtained from a healthy cow; but if any doubt should exist as to the latter I recommend scalding, always with primary scalding of the vessel in which it is about to be retained. In many adults there seems to be an extraordinary repugnance to milk, which boiling intensifies, a dislike which I can only explain by the difficulty they find in digesting it. This may be ameliorated by the addition of barley- or mineral-water, and a few grains of citrate of soda. In suitable cases a teaspoonful of whisky to each glass of milk is a helpful combination. I never permit milk to be taken with a meat meal—for which (dinner) champagne is my nomination.

As to the last-quoted item—"brushing of teeth, gums, and cheeks"—I have no experience of brushing the two latter, but have had an extended one in the brushing of teeth. Rightly or wrongly, I have come to the conclusion that a large percentage of human woe—

e.g., pyorrhœa, dental caries, gastric pollution, appendicitis, and organic decomposition in general—is caused by the inane daily scrubbing of teeth with bristles and by the insane use of chemical dentifrices, both of which lacerate and mortify living tissue, destroy epithelial defence, and provide the entrance for hostile germs. I earnestly invite attention to the handicap this kind of thing imposes on the natural disinfectants—saliva and mucus. I do not believe that there is a human being to be found outside a mad-house who advocates similar brushing of the interior of the anal canal. If such a hygienic enthusiast can be discovered I am prepared to lay him odds that in nine cases out of ten the immediate result will be proctitis plus toxæmia, and that the ultimate one will be cancer.

In ventilating this opinion I do not wish it to be inferred that I disapprove of cleansing the teeth at bedtime. On the contrary, gentle rubbing with a soft (badger hair) brush and some ordinary soda or other effervescing potable water is an unirritating and salutary procedure, and I can personally vouch as to its being an effective and agreeable one. But as to disinfection of the gums and buccal mucous membrane the job appertains to the natural scavengers, and any artificial meddling with their work is as insensate as it is destructive. In other words, do not put anything into your mouth that you would be ashamed to put into your stomach.

I am, Sir, yours faithfully,

JOHN O'CONOR, K.B.E., M.D.

Buenos Aires, April 25th, 1923.

The Services.

ROYAL HOSPITAL, CHELSEA.

Maj.-Gen. H. C. Sutton to be Lt.-Gov. and Sec., vice Maj.-Gen. W. D. Bird.

ROYAL ARMY MEDICAL CORPS.

Capt. A. G. G. Thompson retires, receiving a gratuity, and is granted the rank of Maj.

Temp. Capt. V. J. A. Wilson relinquishes his commn., and retains the rank of Capt.

Temp. Capt. E. K. Campbell relinquishes the actg. rank of Maj.

Temp. Lt. R. W. Shaw to be temp. Capt.

ARMY RESERVE OF OFFICERS.

Col. N. Faichnie, late R.A.M.C., having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

Lt.-Col. G. S. Crawford, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

General List: Maj. E. R. Lovell (late R.A.M.C., S.R.) to be Capt., and relinquishes the rank of Maj; A. H. Richardson (late Surg. Lt. Royal Navy) to be Lt. Capt. H. Wade relinquishes his commn., and is granted the rank of Col.

General Hospitals: Lt.-Col. (Bt. Col.) A. B. Gemmel, having attained the age limit, is retired and retains his rank; Maj. G. R. Murray, having attained the age limit is retired, and retains the rank of Maj.; Capts. A. W. Harrington and G. Wright relinquish their commns. and retain the rank of Capt.

Capt S. D. Reid to be Div. Adjt., 44th (H. Counties) Div., T.A., vice Capt. J. Higgins, vacated.

INDIAN MEDICAL SERVICE.

Lt.-Col. A. A. Gibbs to be Col.

Chuni Lal Katial and Ram Chand Goulatia to be temp. Lts.

The King has approved the grant of the rank of Capt. on retirement to the undermentioned: Braj Bushan Kapila, Gauri Shankar Bhargava, and Girija Sankar Chatarji.

ROYAL AIR FORCE.

The undermentioned are granted short service commissions in the ranks stated: E. D. D. Dickson (Flight Lieutenant) and J. B. Gregor (Flying Officer).

H. H. R. Bayley is granted a temporary commission as Flight Lt.

Flight Lt. C. S. Dowdell relinquishes his temporary commission on ceasing to be employed.

Obituary.

VAUGHAN HARLEY, M.D. EDIN., M.R.C.P. LOND., F.C.S.

Edward Vaughan Berkeley Harley, who died suddenly on May 21st at the age of 59 years, was the son of the late Dr. George Harley, F.R.S. He studied medicine at Edinburgh University, obtaining the bronze medal in pathology, and graduated M.D. with honours in 1886, being awarded the gold medal for the best thesis. The next two years were spent travelling round the world, during which period he had the opportunity of working with the late Sir Patrick Manson. The succeeding four years were occupied in scientific study in Paris (under Profs. Pasteur and Roux), Leipzig (under Prof. Ludwig), Vienna, Buda Pesth, Turin (under Prof. Mosso), and Christiania. In 1893 Harley was invited by the late Sir Victor Horsley to return to London to organise the first department of pathological chemistry in England, in the pathological department of University College, London, and this became a centre of research for post-graduate students. In 1894 he was appointed Grocer Research Student. When Horsley retired in 1896 Harley was appointed professor of pathological chemistry, continuing to occupy the chair until 1919. During this period he published a large number of scientific papers and collected a band of enthusiastic workers in the laboratory. He took a keen interest in the incorporation of University College in the University of London and served on the committee engaged in raising the necessary funds.

In addition to his work as a physician Harley was much interested in farming, especially in shorthorns. For the last 20 years he applied scientific methods at his farm at Walton Hall and took a particular interest in forming the "Notlaw" herd. He won numerous prizes at all the big shows, was the breeder of many other prize-winners and his animals did very well in the Argentine. His Oxford Downs sheep were also successful in the show yard. In addition, he was a breeder of Shires and Large Black pigs. In 1911 he was elected a member of the council of the Shorthorn Society and served on it until his death, being president in 1918.

Prof. Harley married in 1905 Mary, eldest daughter of the late Canon Blagden, and leaves two daughters.

GEORGE HALIBURTON HUME, F.R.C.S. EDIN., M.D. EDIN., D.C.L.,

CONSULTING SURGEON, ROYAL INFIRMARY, NEWCASTLE-ON-TYNE.

THE death on May 8th of Mr. Hume in his seventy-eighth year removed one whose name was intimately associated with surgery in the North of England. Born in Berwickshire, educated at Kelso Grammar School and Edinburgh University, George Haliburton Hume became L.R.C.S. Edin. in 1866 and M.D. in the following year, returning then to Newcastle, where he practised as a surgeon from 1868 to 1914. In 1869 he was appointed assistant surgeon to the Royal Infirmary, retiring as senior surgeon in 1905 and taking a prominent part in promoting the building of the Royal Victoria Infirmary, which was opened in 1906. His deep personal interest caused him to become the historian of the infirmary. For some years he was lecturer on physiology in Durham University, which granted him the D.C.L. in 1893, when he gave the address on the Evolution of Surgical Principles at the meeting of the British Medical Association. He also examined in surgery for the University. Mr. John Clay, one of his younger colleagues on the infirmary staff, writes:—

"Hume was a surgeon who had a wonderful influence on all around him. I can still remember as a child the awe and respect with which he was spoken of in the remote villages of Northumberland. In the operating theatres and on committees his personality seemed at once to bring about a condition of order and diligence. Although silence was such

a prominent feature in his character, when he spoke the words were well chosen and the matter good. His power of conveying much by few words is exemplified in the story of an operation, where the conditions found were not those that had been diagnosed. The practitioner asked him, "What shall we tell the patient's friends?" Hume's answer was, "The truth." As a surgeon he was as thoughtful as a physician, giving the greatest attention to detail in the examination of his patients. He was a patient and careful operator. In the wards he impressed his staff with the wisdom of his judgment, and the care he took in forming it. This was especially seen in his treatment for the relief of obstruction of the urinary passages, where his patient and gentle perseverance was a lesson to us all. In the building of the new infirmary he was continuously with the architect in the working out of the plans, and it is to him we are largely indebted that the hospital is so pleasant for all who work there."

Hume had worked in Berlin and Vienna as well as in Edinburgh, and his wide knowledge of surgical literature made his clinical lectures of great interest. Throughout his life as a teacher he emphasised the importance of principles, and his own consistent following of them earned for him the respect of the community.

Mr. Hume married in 1878 the daughter of Mr. Minchin Jackson, by whom he had two sons and four daughters.

JAMES MIDLETON GRAHAM SWAINSON, F.R.C.S. ENG.

Mr. Swainson, who died suddenly on May 16th, was in his fifty-first year. He received his medical education at the Westminster Hospital, qualifying in 1896, and becoming successively house physician, house surgeon, and resident obstetric assistant. After a voyage to South America as surgeon in the Royal Mail Steam Packet service he entered the Royal Navy in 1898, obtaining a high place in the entrance examination. Having served abroad on the China station in H.M.S. *Powerful*, and desirous of particularly devoting himself to surgery, he resigned his commission in 1902, and became resident medical officer at the Queen's Hospital for Children, Hackney. In 1905 he obtained the F.R.C.S., and in the following year was appointed surgical registrar to the Westminster Hospital and assistant surgeon to the Queen's Hospital. In 1908 he was appointed surgeon to the Bolingbroke Hospital, and soon after became assistant surgeon to the Westminster Hospital, as well as surgical tutor and lecturer in minor surgery. Soon after the outbreak of the Great War Swainson was put in charge of the Scottish Red Cross Hospital at Dunkirk, and for some time carried on there the most laborious surgical work until his health completely broke down, and he returned to England altogether incapacitated. His ardent hope to practise surgery remained unrealised owing to the state of his health, and he relinquished his various appointments. Subsequently for two years he worked on the medical boards of the Ministry of Pensions. In 1921 the post of demonstrator in anatomy at St. Thomas's Hospital Medical School becoming vacant, Swainson applied for it and obtained it. His anatomical knowledge had always been extensive and accurate, and it was now with great keenness and interest that he endeavoured to perfect himself in human and comparative anatomy and embryology. This scheme, too, was unhappily frustrated by the short illness which terminated in his death. Possessing as he did a firm grasp of scientific facts and much philosophic detachment, Swainson should, with kindlier fortune, have gone far towards great success either as a surgeon or as an anatomist. His memory will be revered for the courage with which he faced his eclipsed career and the shipwreck of his hopes.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—Sir Clifford Allbutt will be present at the annual dinner, to be held at the Café Monico, Piccadilly, on June 19th, to receive the triennial gold medal presented by the Society to a distinguished member of the medical profession.

THE SIMMINS APPEAL FUND.

THE appeal on behalf of the children of Temp.-Surg. Lieut. Alfred George Simmins, R.N., who died within a few hours of his wife on March 23rd, has evoked a ready response. The first list of contributions appeared in THE LANCET of April 21st, and the second list is now given. The fund, which has almost reached £1000, still remains open. Cheques and postal orders should be addressed to the treasurer, Simmins Appeal Fund, and addressed Royal Northern Hospital, Holloway-road, London, N. 7.

Second List of Contributions.

	£	s.	d.
Members of London Stock Exchange (Private Collection, per H. P. Semon)	106	14	0
Board of Management of Hospital for Sick Children, Great Ormond-street	25	0	0
A few Members of Lloyds, with promise of more to follow	20	5	0
Gerald Stanley	20	0	0
Drs. Rodgers, Fergus, and O'Neil	12	12	0
O. L. Addison; E. R. Carling; F. J. Cleminson; Mrs. A. M. Collins; A. Evans; L. G. Glover; Edith Hudgell; C. P. Merriam; W. Turner; G. B. M. White each	10	10	0
Anon.; R. Pickard; F. D. Saner; G. Stewart; O. Thomas each	10	0	0
C. Beale; Capt. A. S. Blackwell; Dr. Boden; E. A. Cockayne; J. Fawcett; A. G. Hay; F. C. Lake; A. H. Levy; J. D. R. Munro; W. H. Mollison; A. Blackhall Morison; Sir J. Herbert Parsons; P. M. Rivaz; A. C. Roxburgh; P. Smith; H. C. Snell; A. G. Sutton; W. E. Tanner; A. H. Tubby; G. E. O. Williams each	5	5	0
Anon. (2); A. G. Campbell; Country G.P.; Dr. Friel; J. T. G.; Lt.-Col. L. W. Harrison; Sir Thomas Horder; Barty King; Marquess of Northampton; F. W. Price; E. Telsall; E. E. Ware each	5	0	0
Mrs. Sington	3	10	0
R. Anderson; H. R. Andrews; A. Bevan; Stella Churchill; E. S. Clow; H. Davies; R. Gillbard; J. A. Glover; G. Graham; A. Griffith; Violet Hort; Lord Islington; C. E. Jenkins; C. MacMahon; W. H. McMullen; J. R. Munro; S. Payne; W. R. Reynell; D. D. Ritchie; A. S. Woodwark; L. W. Yealland each	3	3	0
Anon.	3	0	0
T. G. Wilson	2	10	0
W. J. Smyth	2	7	6
B. H. Barton; H. B. Brackenbury; J. Burnford; Aldo Castellani; W. F. Castle; H. Crampton; P. J. Clausen; Drs. Dora Colebrook and Henrietta Davies; C. B. Dansie; G. H. Davy; M. Donaldson; Gertrude Edis; P. P. Ellison; L. S. Fry; Wm. Gayes; W. S. George; R. M. Going; D. H. Griffiths; Ivy E. and A. C. Haslam; Lt.-Commr. L. B. Hill; W. H. Hooton; A. Howell; Sir Arthur Keith; J. B. Kennedy; H. D. Lauchlan; C. A. Lawrence; M. Longinotto; A. A. Parson; Mrs. E. W. Paulley; A. R. G. Pocock; G. H. Ransome; L. H. Robertson; B. B. Sharp; E. Shaw; C. Smecton; G. H. Spencer; A. Starling; R. H. Steen; J. G. Stevens; J. Taylor; Dr. Uhtoff; Sir Jenner Verrall; S. H. Waddy; K. Walker; C. P. White; R. Wilkinson; A. E. M. Woolf each	2	2	0
Anon.; W. O. McKane; N. W. Powell. G. Taylor; W. L. Watt each	2	0	0
Mr. and Mrs. O. Adamson	1	11	6
Lt.-Commr. A. C. Walker	1	10	0
I. Bennett; C. Berkeley; G. Black; G. M. Blair; Capt. H. Bloxsome; A. W. Bourne; S. Bree; Vice-Admiral E. F. Bruen; C. Clayton; R. Cock; D. M. Connon; Emily S. Cooke; H. Dixon; Dorothy Dobbin; G. J. Dudley; T. R. Elliott; J. Fletcher; A. S. Gubb; J. S. Hall; A. G. Henderson; R. K. Howat; Hunterian Society; "In Memory of Donald"; F. N. Jaboor; Mrs. M. Jenkins; Capt. E. B. Jones; J. G. Jones; T. C. Last; L. M. Ladell; E. A. Levieseur; A. G. Levy; W. S. Loder; C. J. R. MacFadden; R. Marshall; F. N. K. Menzies; Major A. H. M. Mitchell; P. H. Mitchener; G. B. Morley; M. Mottram; W. Oats; H. Robertson; G. R. Rudkin; A. E. Rutherford; W. Sandol; C. H. Sedgwick; H. Sharman; A. W. Sheen; G. B. Siddall; F. W. Strugnell; H. Sutherland; L. T. Thorne; W. Tyson; H. J. Van Praagh; L. A. Walker; Dr. Westman; S. Wickenden; W. O. Williams; C. W. Wirgman each	1	1	0
Anon. (2); R. B.; G. S. E. (Board of Trade); Lt.-Col. G. F. Gubbins; W. Kaula; A. G. M. Paget; L. C. C. Reynolds; Lt.-Commr. L. Warren; Col. D. Wilkie each	1	0	0
Amounts under £1 total	1	12	6

THE GENERAL MEDICAL COUNCIL.

THE summer session of the General Medical Council was opened on May 29th. Pending the election of a President, the Senior Treasurer (Mr. H. J. WARING) occupied the chair, and welcomed two new members of the Council—Sir W. Leslie Mackenzie, Crown Nominee for Scotland, who was prevented by illness from taking his place at the November session, 1922, and Prof. W. L. H. Duckworth, representative of the University of Cambridge.

Election of President.

On the motion of Sir NORMAN WALKER, seconded by Sir JOHN MOORE, Sir Donald MacAlister was re-elected President.

The President's Address.

The PRESIDENT began by alluding to his long service of 34 years on the Council, and to the fact that he had been first elected president 19 years ago, and he thanked the Council for their invitation to enter upon another lustre of responsible duty in the chair. He continued by drawing attention to the special relations of the Council to the Privy Council and said: "In some matters the approval of the Privy Council is necessary to make our decisions operative. In others, our decisions are subject to an appeal to the Privy Council. It regulates our elections, and it advises the Crown concerning the appointment by His Majesty in Council of five members and three additional members. It applies to British Possessions and foreign countries the part of the Medical Act, 1886, which makes professional reciprocity possible. Lastly, if in anything the Medical Council neglects its duty, the Privy Council may formally direct that the duty *shall* be performed; and in default of obedience, the Privy Council may itself 'exercise any power or do any act or thing vested in or authorised to be done by the General Council.' Our minutes, the reports of our inspectors of examinations, our resolutions for the recognition of Colonial and foreign diplomas, and others of our Acta, are accordingly submitted officially to the Privy Council, in order that its statutory power of supervision may be conveniently exercised. Our regular work thus brings us into constant and intimate association with the Privy Council Office, and in particular with the Clerk of the Council as head of its administrative staff. Sir Almeric FitzRoy has held that responsible position since 1898, and his retirement from office, on the ground of age, is announced to take place in July. In all the 20 years during which it has been my privilege to take counsel with him on the Council's business, he has never failed to accord me his wise and sympathetic assistance, or to manifest his understanding interest in the Council's activities and in their bearings on public and professional welfare. I have had the like testimony from my predecessor in the chair, Sir William Turner, and from many other colleagues on the Council. His membership of various departmental committees and Royal commissions, such as those on physical deterioration, midwives, venereal diseases, and the Dentists Act, has made him familiar with the subject-matter of medical and dental problems which concern the Council, and has enabled him to make from his own knowledge and experience important contributions to their solution. The Council, I am convinced, will be unwilling to witness his retirement, from an office in which he has rendered such signal aid to medical and dental administration, without joining me in a cordial expression of the value we set on his public services, and of our good wishes for his health and well-being when freed from official cares."

The President noted the only change in the membership of the Council—namely, the substitution of Dr. W. L. H. Duckworth for Prof. Gowland Hopkins as the representative of the University of Cambridge, and congratulated Sir Norman Walker, the chairman of business, upon receiving the honour of knighthood.

Dangerous Drugs Act.

Concerning this Act, the President said: "A Bill amending the Dangerous Drugs Act, 1920, and in certain details the Pharmacy Act, 1868, has been the subject of considerable discussion in Parliament, and has now passed into law in an amended form. It adopts as statutory the method of calculating the percentage composition of liquid preparations prescribed in the British Pharmacopœia of 1914. It mitigates the stringency of certain of the rules to be observed by registered medical practitioners in purchasing, procuring, prescribing, or dispensing the scheduled drugs. And, while it increases the penalties for criminal breach or evasion of the Regulations, it offers certain fresh safeguards against the officious prosecution of offenders by inadvertence. During the passage of the measure through Parliament no communication has been made to the Council by the Government Departments concerned, either on the subject of the proposed amendments, or of the alteration of the Regulations made or to be made under the Acts. But Members of Parliament who happen to be registered practitioners, among them our colleague Sir Sydney Russell-Wells, have taken an active part in the debates on the Bill. They have succeeded in so shaping the new Act as to ensure that its provisions, while carrying out our international obligation to put down the nefarious traffic in certain dangerous drugs, shall be as little oppressive as possible to practitioners whose duty it is to employ them for beneficent purposes."

The Diploma in Sanitary Science.

After bestowing a warm eulogy upon Sir George Newman's Memorandum to the Ministry of Health, on the Advance of Medical Education in England,[1] the President proceeded to call attention to the statutory registrable diploma in sanitary science, public health, or State medicine, dealt with in Section 21 of the Medical Act, 1886. "That diploma," he said, "must by law be such as 'appears to the Privy Council or to the General Council to deserve recognition in the Medical Register,' as a diploma additional to one in medicine already registered. By an Act of 1888, moreover, passed in the year after the Medical Council had recognised and registered the first diplomas in public health, such an additional diploma was made a statutory qualification for the medical officers of health of certain large areas in this country. The law thus made the Privy Council and the General Council the joint guarantors that the registrable diploma was in fact a full and sufficient technical qualification for entering on the important civil functions devolving on such medical officers. These functions have by successive Public Health Acts been multiplied and extended. It is thus the statutory duty of the Privy Council and the General Council, jointly or severally, to see to it that the conditions on which the statutory qualifying diploma is recognised and registered are correspondingly extended. The diploma of to-day must testify that the practitioner who holds it is not merely qualified to practise medicine, but qualified by special training to fulfil all the special professional and administrative duties that to-day are imposed by Statute on the medical officers of the largest civil communities in Great Britain. Naval hygiene, military hygiene, tropical hygiene, and the hygiene of British possessions and foreign countries, whose laws and usages differ from ours, are most important post-graduation studies, and in the national and imperial interest deserve every encouragement that can be afforded by the Government and by professional authorities. Special certificates of honour may properly be instituted for those practitioners who show that they have attained proficiency in these studies. I venture to submit that the Medical Council has no statutory power to control the studies or to recognise such certificates. They concern

[1] See THE LANCET, May 5th, 1923, p. 909.

only the medical authorities who quite properly may grant them, and they are not registrable in the Medical Register. These special studies and certificates, however, are not relevant to the purpose of the statutes I have quoted. They do not bear on the qualification of whole-time medical officers of health to undertake responsible civil duty in the counties and large cities of this country. The Council is thus under statutory obligation to ensure, by its rules for the granting of registrable diplomas in public health, that the course of training to which they bear witness shall be specifically a training for high civil responsibility in public health administration at home. The application of the general principles of preventive medicine to medical practice, and the several special branches of collective hygiene to which I have referred, are proper subjects of study during or after the ordinary medical curriculum. But such study does not ensure the particular kinds of knowledge and experience required to qualify a practitioner for a definitely specialised career in the administrative service of a civil community in Great Britain. The course for the diploma must, therefore, not be modified and diverted from its primary and essential purpose, merely in order that the same diploma may conveniently afford a creditable decoration for practitioners who contemplate careers other than that of the professional medical officer of health. The Council acted on that conviction when it unanimously adopted the new rules under Section 21 of the Act. Sir George Newman in his memorandum adduces weighty reasons of public policy in support of the Council's action. The Public Health Committee will probably present a report on certain communications suggesting modifications in the new rules, which have been referred to it for consideration. The Council will doubtless keep in mind, when dealing with such suggestions, the definite legal obligations it has to observe."

The President went on to say that the warning notice with respect to unprofessional advertising had been amended, and that the disciplinary work of the Dental Board had been considerable, with the result that certain cases heard before it would be submitted to the Council for adjudication. He indicated that all the time of the present session would be spent in disciplinary inquiries. He concluded by making the following statement in respect of the numbers of registered students and practitioners:—

The Statistics of the Profession.

"The rise in the number of registered medical students from 1875 in the year 1916 to 3420 in 1919 was succeeded by a fall to 1808 in the year 1921. Last year (1922) the number of entrants rose slightly, notwithstanding the higher educational qualification required by some of the bodies, to 1833. It is still some 400 above the entries for 1912 and 1913. Possibly it may now fall to a point approaching that of the pre-war years, as a result of the new regulations which came into force at the beginning of this year. The number of medical practitioners registered in 1922 was 1984, which is 224 above the number for 1921, hitherto the highest on record. The number of names removed from the Register, by reason of death or otherwise, was 1045. The result is that the total number of medical practitioners now on the Register is 46,477, which considerably exceeds any previous record. As the number of registrations in the Colonial List and the Foreign List has fallen considerably, it may justly be said that the wastage of the war has been much more than made up by fresh accessions to our professional ranks from the medical schools of Great Britain and Ireland."

Dr. CATON, in moving the adoption of the address, expressed the thanks of the Council to Sir Donald MacAlister and their pleasure at his re-election. Sir NORMAN WALKER seconded. The Council then proceeded to the elections to committees, and later to the consideration of penal cases.

FEDERATION OF MEDICAL AND ALLIED SERVICES.

THE ANNUAL DINNER.

THE annual dinner of the Federation of Medical and Allied Services was held at the Langham Hotel, Portland-place, London, W., on May 29th, when the Minister of Health, the Rt. Hon. Neville Chamberlain, M.P., was the principal guest. Sir Berkeley Moynihan, the President, was in the chair, and there was a large attendance.

After the toast of "The King" had been duly honoured, the Chairman proposed the toast of "The Minister of Health," who, he said, bore an honoured name most worthily. One had to remember, he continued, that health nowadays was a very serious business, for it was no longer the concern of the individual or of the community or even of the nation. It was now a matter of international consequence. But around matters of health unhappily there had grown up many serious conflicts of opinion and a Minister of Health therefore had to walk warily. The community were at last beginning to take an interest in public health and that was all to the advantage of the Federation. If cancer was only to be cured by early research it was essential that the public should be educated to discover and report themselves very early in regard to those departures from health which cancer declared. It was difficult to draw the line between necessary reticence and adequate publicity so far as tuberculosis was concerned, and especially surgical tuberculosis, in which it was quite impossible for surgery to carry the warfare much further. Almost all of that disease was due to drinking contaminated milk. A report of the Manchester Corporation had declared that 39·5 per cent. of the milk delivered in Manchester contained active living tubercle bacilli. That milk was the food of children who were put in an incubator—the slums—where the organisms grew surgical tuberculosis, and the hospitals in Manchester and every city were filled with hundreds and thousands of patients who came back over and over again with a disease which should have been prevented in its earliest stages. Public health could no longer be studied unless the public played their part. One of the lessons which we had learned during the war was that no campaign could be planned or launched unless regard were paid to the casualty lists, for the strength and striking power of the army depended upon the health of the troops. It was the same in industry as in war, and captains of industry were beginning to realise that if they were to carry on their work with the largest profit they must have regard to the welfare of the men working for them. In this connexion the Federation was playing an important part. Its annual report showed that industry after industry was beginning to realise that the Federation was giving them substantial help in this matter, but if the work was to extend and grow it was necessary that further financial support should be forthcoming. The great resources of the Federation in technical knowledge were at the disposal of the Minister of Health, and the Federation would be proud to be made the medium of help in every possible way.

Mr. Neville Chamberlain, in responding, said that there might be more health in his official title than in any of his functions, but he was glad to know that there was a body like the Federation with such vast stores of knowledge and experience to which he could turn for advice and counsel. Ever since he had been interested in public work he had been impressed by the thought that there was no greater benefit that statesmanship could confer on the people of any country than that of improving the public health. No man could enjoy life unless he was physically fit, and unfortunately side by side with the great advance in our civilisation there had grown up new conditions, a greater congestion of population, a higher nervous pressure, and a general increase in the pace at which

we lived that had made increased demands on the human frame and had to some extent destroyed the advantages we might have hoped to have derived. Anything that could be done to raise the standard of health and to teach people how to be healthy was calculated to do more for happiness, prosperity, and efficiency than anything else to which they could turn their minds. He was glad to hear Sir Berkeley Moynihan refer to the coöperation with industry because he felt convinced that that was a valuable sphere of operation. Having regard to the many diseases that prevailed, the causes of which were obscure, it seemed to him that there was nothing they could more fruitfully devote their attention to than the prosecution of research. But more opportunities and more inducements must be provided for men to engage in research. Doctors could not do that and at the same time carry on a general practice in order to live. It could not be doubted that the efforts made in recent years to grapple with scarlet fever, measles, cancer, and other dangerous enemies of mankind, had borne good fruit, for in the years that followed the war, despite all its consequences in suffering and depression, the vital statistics of the country were never so favourable. He supposed that some day they would have a complete health policy for the country, and it would have to come about under a Minister that was fortunate enough to remain in office for more than a few months at a time. He did not pretend to say what that policy would be, but he thought we could even now see where our weak spots lay. The institutional accommodation was inadequate. We had physicians and surgeons who were second to none, but we did not make the best use of their services, nor of the nurses. To attain an efficient health policy all the resources at our disposal had to be used, and it was because the Federation could help in that matter that he wished it all prosperity and success.

In the unavoidable absence of Mr. Charles Carpenter, D.Sc., Vice-Chairman of the Citizens Council, Sir Thomas Horder proposed "Our Guests," coupling with the toast the names of the Rt. Hon. Lord Riddell and Sir William Hale-White, President of the Royal Society of Medicine. These gentlemen having replied, Mr. Ernest Clarke proposed a vote of thanks to Colonel Mummery, the honorary secretary, who in his reply said that the Federation was now working in a very satisfactory way, though there was an adverse financial balance, but he hoped that before another year had passed that balance would be on the right side of the account.

During the evening Mr. Frederick Dawson, a friend of the President, charmingly entertained the guests at the piano. The following were among those present:—

Sir Berkeley Moynihan; Rt. Hon. Neville Chamberlain, M.P.; Sir Walter Kinnear, Controller, Insurance Dept., Ministry of Health; Lord Riddell; Sir William Hale-White, President, Royal Soc. of Medicine; Dr. Herbert Spencer, President, Medical Soc. of London; Sir Arthur Robinson, Permanent Secretary, Ministry of Health; Mr. Alfred Salmon; Mr. W. A. Ward-Jones; Dr. J. Blomfield; Dr. R. McNair Wilson; Mr. Laurence Brock, Assist. Secretary, Ministry of Health; Mr. Cyril Watts; Mr. E. T. Neathercoat, President, Pharmaceutical Society; Sir Bruce Bruce-Porter, representing the Vermin Repression Society; Mr. Harold Morris, K.C., M.P.; Mr. Henry Lesser, LL.B., Hon. Sec., Citizens Council; Sir Charles Macara; Major J. E. Molson, M.D., M.P.; Lt.-Col. F. E. Fremantle, M.P., Chairman, Parliamentary Medical Committee; Lt.-Col. Nathan Raw; Sir Charles Gordon-Watson; Sir Thomas Horder, Chairman, Federation Medical Council; Lord Dawson of Penn; Col. Howard Mummery, Medical Director, the Federation; Commander O. Locker-Lampson, M.P.; Dr. Howard Marshall; Miss Montgomery, R.R.C., representing the Assoc. of Hospital Matrons; Sir Thomas Neill, Chairman, Council, National Health Insurance, Ministry of Health; Mr. J. P. Lockhart-Mummery, F.R.C.S.; Mr. E. Fitzgerald Frazer, F.R.C.S.I.; Sir Malcolm Morris, Vice-President of the Federation; Mr. W. P. Crocker; Sir J. Herbert Parsons, F.R.S.; Mr. Ernest Clarke, F.R.C.S., Vice-Chairman, Medical Council; Dr. R. A. Gibbons; Dr. Jane Walker, Joint Hon. Sec. of the Federation; Mr. W. A. Workman, representing Legal and General Assurance Soc., Ltd.; Dr. J. F. Gordon Dill, Joint Treasurer of the Federation; Sir J. Dundas-Grant; Mr. F. W. Davy; Mr. Montagu Hopson, L.D.S., representing the British Dental Assoc.; Dr. Charles Buttar, Joint Hon. Sec. of the Federation and representing the Harveian Society; Prof. Frederick Hobday, representing Nat. Veterinary and Medical Assoc.; Mr. R. D. Blumenfeld; Miss Barton, representing the Poor-Law Infirmary Matrons Assoc.

Medical News.

ST. THOMAS'S HOSPITAL MEDICAL SCHOOL.—The distribution of prizes by the Duke of Connaught will take place in the Governors' Hall of the hospital on June 13th, at 3 P.M.

HOSPITAL SAVING ASSOCIATION.—At a meeting of the Metropolitan Counties Branch of the B.M.A., held on Tuesday last, a report was discussed on the contributory scheme of the Hospital Saving Association, when the meeting unanimously endorsed the condemnation by the report of the mode of admission of out-patients.

OPENING OF HEATHERWOOD HOSPITAL, ASCOT.—This hospital, which has been built by the United Services Fund to deal with cases of surgical tuberculosis among children of ex-Service men, was formally opened on May 29th by H.R.H. the Duke of Connaught. The building provides accommodation in three wards for 150 patients—babies, girls, and boys.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.—A meeting was held at the Elizabeth Garrett Anderson Hospital on May 15th, with Dr. Louisa Martindale, the President, in the chair. Miss Octavia Lewin read a paper on Personal Hygiene and its Place in School Teaching, giving instances that had come under her notice of inadequate provision of facilities for personal hygiene. These included insufficient lavatory accommodation in schools, absence of handerkchiefs and of the knowledge of their use, overtight clothing, and indiscriminate kissing of children even when suffering from infectious diseases. Dr. Lewin discussed the various sources from which education on personal hygiene may be expected: (1) the parents; (2) the teachers; (3) the public libraries and the press. Dr. Lewin said how she had found in the Encyclopædia at the British Museum that the pages dealing with disease were so thumb-marked as to be almost illegible. She also showed cuttings of the quack medicines advertised in one issue of a daily paper, which were so numerous as to cover a whole sheet of the paper. A discussion followed in which Drs. M. F. Jevons, A. Parsons, L. Fairfield, L. Wilson, Elmsley, H. Hanson, J. Lane-Clayton, A. Hutchinson, and E. Handley Read took part, showing what is actually being done by the school medical service to deal with the problem.

IRELAND AND THE PASTEUR CENTENARY.—Several representatives from Ireland have been attending the Pasteur Centenary celebrations. The Government of the Free State is represented by Dr. George Sigerson, who as a young man studied in Paris more than 60 years ago. Dublin University has sent one of its most distinguished medical graduates, Sir Almroth Wright, while the National University of Ireland is represented by Mr. James Merriman, President of University College, Cork, and Dr. J. O'Connor, Professor of Physiology in University College, Dublin.

MEDICAL SERVICE IN CONNEMARA.—A deputation representative of the medical practitioners in Connemara had an interview last week with officials of the Local Government Board, at which they pointed out the conditions under which dispensary doctors worked in the county, and drew attention to the fact that the sum of £42,000 per annum was provided by the British Government for a proper medical service for the Highlands and Islands of Scotland, the doctors being assured of a net income of £500 a year after the payment of all expenses. In Connemara and the poorer parts of Galway the present medical officers were unable to make a living. Connemara in particular was the home of tuberculosis, typhus, and typhoid, and quite a number of doctors had lost their lives through disease and accident in endeavouring to alleviate the sufferings of the poor. A couple of doctors had died in absolute poverty, and within recent years five had died of typhus alone. The deputation made certain recommendations as to the improvement of salaries. It is not an uncommon thing for doctors in Connemara to have to travel 200 miles per week in the discharge of their duty; some of them were unable to afford a motor car, and those who had to hire a car often found their salary wiped out by the bill for travelling expenses. The representatives of the Local Government Department were favourably impressed and assured the deputation that their claims would be sympathetically considered when dealing with the medical scheme, which is expected to come before the Dail shortly.

ASSOCIATION OF ECONOMIC BIOLOGISTS.—The annual field meeting of the association will be held at Cambridge on June 15th. The laboratories and investigations in progress on animal nutrition and physiology in the School of Agriculture will be demonstrated. The laboratories of the National Institute of Agricultural Botany and Seed Testing Station and the field trials of agricultural crops will be inspected, and at the University Farm and Plant Breeding Institute investigations in progress on cereal hybridisation will be shown. Those intending to be present are asked to notify Mr. W. B. Brierley, Rothamsted Experimental Station, Harpenden, Herts, on or before June 6th.

LEAGUE OF NATIONS HEALTH COMMITTEE.—The matters under discussion at the sixth session of the League Health Committee, which began in Paris on May 26th, show the development of inter-Governmental coöperation in public health matters in the two years since the foundation of the League Health Organisation. As regards epidemiological intelligence and public health statistics, a regular and rapid collection and distribution of information has been initiated, and it is hoped that the organisation will become a central clearing house for all such matters. The progress of the three committees of inquiry working under the auspices of the organisation is also under discussion. Of these committees, the first is investigating the prevalence of sleeping-sickness and tuberculosis in tropical Africa since the war. The second and third are joint subcommittees of, respectively, the League Opium and Health Committees on the one hand, and the Health and Transit Committees on the other. The Opium and Health Subcommittee is conducting an inquiry into the quantity of opium and other dangerous drugs required annually by the various nations for legitimate purposes, as part of the campaign against the illicit drug traffic now being conducted by most of the Governments of the world. The Health and Transit Subcommittee is collecting information for a conference between the various European States having navigable inland waterways, for the purpose of coördinating and tightening up sanitary control and anti-epidemic measures without interfering with the normal functions of these arteries of trade. Further reports concern the applied research work on a common plan in laboratories scattered all over the world, undertaken during the last year and a half under the auspices, and on the initiative, of the Health Organisation, and aiming at international agreement on methods of testing and measuring the strengths of sera and serological tests. A similar programme is proposed in regard to certain biological products used as powerful drugs, such as insulin, digitalis, and pituitary extract. In the field of executive work and coördination between various health administrations attention is drawn to the courses in anti-epidemic work for public health officials that are being conducted under the auspices of the Health Organisation in Warsaw, Moscow, and Kharkov, where the need for trained personnel is so acutely felt. The question of further perfecting and developing the system of visits for international groups of public health officers studying the sanitary systems of one or two countries is also under discussion. By an arrangement concluded with the Soviet Russian delegation at the Genoa Conference, the members of the Health Committee, together with a delegate from the Central Health Authorities of Soviet Russia, constitute a special international commission for discussing the anti-epidemic campaign as it affects Russia.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY, Burlington House, W.

THURSDAY, June 7th.—4.30 P.M.

Papers to be read:—Sir Charles Sherrington, P.R.S., and E. G. T. Liddell: Stimulus Rhythm in Reflex Tetanic Contraction. K. N. Moss: Some Effects of High Air Temperatures and Muscular Exertion upon Colliers. (Communicated by Dr. J. S. Haldane.)

Paper to be read in title only:—F. A. E. Crew: The Significance of an Achondroplasia-like Condition met with in Cattle. (Communicated by Sir Arthur Keith.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Wednesday, June 6th.

SURGERY: at 5.30 P.M.

Papers:

Mr. R. H. A. Whitelocke: The Treatment of Fractures of the Patella.

Mr. Winsbury White: The Closure of the Suprapubic Fistula following Prostatectomy; Observations on 68 Cases.

Thursday, June 7th.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.

Specimens:

Dr. Herbert Spencer: (1) Sarcomatous Ovarian Dermoid. (2) Ruptured Carcinoma of Ovaries; no Recurrence. (3) An Effect on the Fallopian Tube of Torsion of an Ovarian Tumour.

Dr. Russell Andrews: A case of Carcinoma of the Cervix in a Woman of 77 associated with Prolapse of the Uterus.

Papers:

Mr. Victor Bonney: Diurnal Incontinence of Urine in Women.

Mr. Leonard Phillips: The Treatment of Dysmenorrhœa with Analysis of 100 Cases.

Friday, June 8th.

OPHTHALMOLOGY: at 8.30 P.M. (Cases at 8 P.M.)

Annual General Meeting:

Election of Officers and Council for 1923–24.

Cases:

Mr. H. M. Joseph: Progressive Macular Changes associated with Tremors.

Mr. Montague Hine: Three Cases of Hereditary Corneal Opacities.

Papers:

Miss Ida Mann: Some Suggestions on the Embryology of Congenital Crescents.

Mr. P. Doyne: The Tournée Reaction.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East, S.W.

THURSDAY, June 7th.—5 P.M., First Croonian Lecture: Prof. J. B. Leathes: The Rôle of Fats in Vital Phenomena.

FELLOWSHIP OF MEDICINE POST-GRADUATE LECTURES, 1, Wimpole-street, W.

TUESDAY, June 5th.—5.30 P.M., Mr. R. A. Hendry: The Value of Antenatal Supervision.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY, June 4th.—12 noon, Mr. Simmonds: Applied Anatomy. 2.30 P.M., Dr. Saunders: Medical Wards. 3 P.M., Mr. Simson: Diseases of Women.

TUESDAY.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations. 11 A.M., Dr. McDougal: Electrical Department. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear.

WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 2 P.M., Dr. Burnford: Medical Wards. 3 P.M., Dr. Pernet: Skin Department.

THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Department. 12 noon, Mr. Simmonds: Demonstration of Fractures. 2 P.M., Mr. MacDonald: Genito-Urinary Department.

FRIDAY.—10 A.M., Mr. Dudley Buxton: Dental Department. 11 A.M., Dr. McDougal: Electrical Department. 3 P.M., Mr. Sinclair: Surgical Out-patients.

SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.

Daily, 10 A.M., to 6 P.M., Saturdays, 10 A.M., to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.

POST-GRADUATE COURSE: MAY–JUNE, 1923.

CLINICAL LECTURES AND DEMONSTRATIONS.

MONDAY, June 4th.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., Neuroparalytic Keratitis: Mr. Paton.

TUESDAY, June 5th.—2 P.M., Out-patient Clinic: Dr. Grainger Stewart. 3.30 P.M., Trophic Disorders in Disease of Nervous System: Dr. Hinds Howell.

THURSDAY, June 7th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Disordered Gaits in Nervous Disease: Dr. Hinds Howell.

FRIDAY, June 8th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Myasthenia Gravis: Dr. Saunders.

COURSE OF LECTURES ON NEURO-PATHOLOGY.

MONDAY, June 4th.—12 noon, Pathology of the Neuron: Dr. J. Godwin Greenfield.

A COURSE of 12 LECTURES on the ANATOMY AND PHYSIOLOGY OF THE NERVOUS SYSTEM will be given at 12 noon on TUESDAYS and FRIDAYS if there are sufficient entries for it.

Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.

The fee for the whole Course is £12 12*s.*, including Anatomy and Physiology, but these Lectures may be taken separately for a fee of £4 4*s.* The fee for the Course without Anatomy and Physiology Lectures is £10 10*s.* Special arrangements as to fees will be made for those unable to take the whole Course. Fees should be paid to the Secretary of the Hospital at the office on entering for the Course.

C. M. HINDS HOWELL, Dean of Medical School.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
Demonstration of Clinical Cases at 3.30 P.M.
MONDAY, June 4th.—Mr. J. Bright Banister: Gynæcological.
TUESDAY.—Dr. J. Metcalfe: Radiological.
WEDNESDAY.—Mr. C. H. Hayton: Throat and Nose.
THURSDAY.—Dr. Yealland: Medical.
FRIDAY.—Mr. E. Gillespie: Surgical.

NORTH-EAST LONDON CLINICAL SOCIETY, Prince of Wales's General Hospital, Tottenham, N.
THURSDAY, June 7th.—4.15 P.M., Dr. A. J. Whiting: The General Signs of Cerebral Tumour.

LONDON HOSPITAL MEDICAL COLLEGE, Mile End, E.
WEDNESDAY, June 6th.—4.15 P.M., Dr. W. M. Feldman: Fœtal Physiology.
FRIDAY.—4.15 P.M., Mr. A. J. Walton: The Thyroid Gland.

LONDON SCHOOL OF MEDICINE FOR WOMEN, 8, Hunter-street, W.C.
TUESDAY, June 5th.—5 P.M., Prof. A. L. McIlroy: Fœtal Welfare and Mortality.

INSTITUTE OF PATHOLOGY AND RESEARCH, St. Mary's Hospital, Paddington, W.
THURSDAY, June 7th.—4.30 P.M., Prof. F. G. Hopkins: An Oxidising Agent in Living Tissues.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, June 7th.—4 P.M., Dr. A. M. H. Gray: Eczema.

INFANTS HOSPITAL, Vincent-square, S.W. 1.
MONDAY, June 4th.—6 P.M., Dr. Eric Pritchard: Milk Analysis, &c.
TUESDAY.—8.45 P.M., Dr. Vincent Denne: Prophylaxis in the Treatment of Teeth in Infancy.
THURSDAY.—6 P.M., Dr. Eric Pritchard: Examination of Urine and Stools of Infants.
FRIDAY.—8.45 P.M., Mr. Philip Franklin: The Causes, Treatment, and Prevention of Adenoids and Enlarged Tonsils.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.
THURSDAY, June 7th.—5 P.M., Mr. L. C. Rivett: Venereal Disease in Pregnancy.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE LECTURES.
TUESDAY, June 5th.—4.15 P.M., Mr. F. H. Westmacott: Mastoid Disease.

UNIVERSITY OF BRISTOL POST-GRADUATE DEMONSTRATIONS.
MONDAY, June 4th.—At Hereford, Mr. T. Carwardine: Abdominal Pain and Its Causes.

Appointments.

MISBAH, A. N., M.D., Ch.B., D.T.M., D.P.H. Liverp., F.R.C.S. Edin., has been appointed Principal Medical Officer for the Government Hospital, Aswan, Egypt.

POTTS, T. N. V., M.B., B.S. Durh., D.Hy., D.P.H., Assistant Medical Officer of Health, Newcastle-upon-Tyne.

RYAN, V., M.B., B.Ch. N.U.I., Assistant Resident Medical Officer, Winsley Sanatorium, near Bath.

TORRENS, J. A., M.D., B.S. Lond., F.R.C.P. Lond., and SMITH, E. BELLINGHAM, M.D., B.S. Lond., M.R.C.P. Lond., Physicians to St. George's Hospital.

Vacancies.

For further information refer to the advertisement columns.

Aberdeen Royal Infirmary.—Asst. S.
Birkenhead Borough Hospital.—Hon. Radiologist.
Blackburn County Borough.—Asst. M.O.H., &c. £600.
Bootle Borough Hospital.—Hon. Gyn. S. Also Hon. S. to Ear, Nose, and Throat.
Brentwood Mental Hospital.—Jun. Asst. M.O. £510.
Bristol General Hospital.—Clinical Assts.
Charing Cross Hospital Medical School, W.C.—Pathological Chemist. £400.
Derbyshire Royal Infirmary, Derby.—H.S. £200.
Dublin, Dr. Steevens' Hospital.—Hon. Obstet. P. Hon. Dent. S.
Eastbourne, Princess Alice Memorial Hospital.—Res. H.S. £175.
Elizabeth Garrett Anderson Hospital, Euston-road.—Asst. S.
Epsom, Queen Mary's Convalescent Centre.—Jun. M.O. £350.
Fife and Kinross Joint Sanatorium.—Res. Asst. M.O. £250.
Glasgow, Gartloch Mental Hospital.—Locum Tenens. £350.
Guildford, Royal Surrey County Hospital.—H.S. £150.
Hampstead General and North West London Hospital, Haverstock Hill, N.W.—H.P., H.S., and Cas. M.O. Each £100.
Hertford County Sanatorium, Ware Park, near Ware.—Asst. M.O. £300.
Hull Royal Infirmary.—Hon. Asst. S.
India, Countess of Dufferin's Fund.—Two Medical Women. Rs.550 per mensem.
Lancaster County Mental Hospital.—Asst. M.O. £440 17*s.*
Leamington Spa, Warneford, Leamington, &c., General Hospital.—Res. H.P. £150.
London County Mental Hospital Service.—Seventh Asst. M.O. £440.
London Lock Hospital, 91, Dean-street, W.—Clin. Assistantships.
Maidstone, Kent County Ophthalmic Hospital.—H.S. £300.
Metropolitan Ear, Nose, and Throat Hospital, 2, Fitzroy-square, W.—Asst. S.
North Middlesex Hospital, Edmonton, N.—Asst. M.O. £200.
Oxford, Radcliffe Infirmary and County Hospital.—H.P. £200.
Portsmouth Royal Hospital.—Sen. H.S. £200. Also Two Asst. H.S.'s. Each £150.
Royal Dental Hospital of London, 32, Leicester-square, W.C.—House Anæsth. 10*s.* 6*d.* per attendance.
Royal Free Hospital, Gray's Inn-road, W.C.—H.P., H.S., Asst. Cas O., Obstet. H.S. Also H.S. and Obstet. Asst. £50.
Royal Northern Hospital, Holloway, N.—Ophth. S.
St. Lucia, Victoria Hospital.—Res. S. £500.
St. Mary's Hospital for Women and Children, Plaistow, E.—Hon. P. and Hon. Asst. P.
St. Peter's Hospital for Stone, &c., Henrietta-street, Covent Garden, W.C.—Clinical Assts.
Ventnor, Isle of Wight, Royal National Hospital for Consumption.—Asst. Res. M.O. £300.
Welsh Board of Health.—Female M.O. £600.
Western Dispensary, 38, Rochester Row, Westminster.—Res. Med. Pract. £100.
Western Australia Lunacy Department.—Sen. Asst. M.O. £552.
West London Hospital, Hammersmith-road, W.—H.P. and H.S. Each £100. Also Asst. Anæsth. and Hon. Med. Radiologist.
West Middlesex Hospital, Isleworth.—Asst. Med. Supt. £350.

Workmen's Compensation Act: Ophthalmic Specialist Medical Referee for County Court Circuits Nos. 24 and 30 (Brecknockshire, Monmouthshire, and Glamorganshire). Applications should reach the Private Secretary, Home Office, S.W., not later than June 16th.

Births, Marriages, and Deaths.

BIRTHS.

CRUICKSHANK.—At 9, Royal Crescent West, Glasgow, on May 24th, to Dr. and Mrs. J. N. Cruickshank (Dr. May Slimmon)—a daughter.

FORWARD.—On May 19th, at Northmead Cottage, Farnham Common, the wife of Dr. E. L. Forward, of a son.

FRANCIS-WILLIAMS.—On May 15th, at Hillside, Dowlais, the wife of Cecil Francis-Williams, M.R.C.S. Eng., L.R.C.P. Lond., of a son.

MCFADYEAN.—On May 18th, at "San Remo," Herne Hill, S.E., the wife of Kenneth McFadyean, M.R.C.S., L.R.C.P., of a son.

ROGERSON.—On May 17th, Dorothy M. Rogerson, M.A., wife of Dr. Rogerson, Broadway, Bexley Heath, of a daughter.

SAWDAY.—On May 25th, at 29, Hartington-street, Derby, to Winifred (née Amos), wife of A. Ernest Sawday, M.B., B.S. Lond.—a daughter.

SCOTT.—On May 21st, at Coupar House, Blandford, the wife of Lieut.-Colonel L. Bodley Scott, M.D., I.M.S., of a son.

SPRENT.—On May 23rd, at a nursing home, Chester, the wife of W. S. Sprent, M.D., of a son.

DEATHS.

COLLINS.—On May 20th, Walter Charles Grosett Collins, M.D.

HARLEY.—On May 21st, very suddenly, at Walton Hall, Edward Vaughan Berkeley Harley, M.D., M.R.C.P., of Harley-street and Walton Hall, Bletchley, aged 59 years.

HARRISON.—On May 18th, at Granville-gardens, Shepherd's Bush, after a long illness, Henry Francis Egbert Harrison, M.R.C.S., L.R.C.P., in his 78th year.

HEGGS.—On May 19th, at Woodborough-road, Nottingham, from the after-effects of gas poisoning in the war, Major Francis Raymond Mitchell Heggs, M.R.C.S., L.R.C.P. Lond., R.A.M.C., T.F., aged 48 years.

HERAPATH.—On May 19th, at "Stoneleigh," Cotham Park, Bristol, Charles Kynaston Coathupe Herapath, M.R.C.S., L.R.C.P.I., aged 69 years.

KNIGHT.—On May 7th, at West Norfolk and King's Lynn Hospital—following an operation—Frederick Charles Rienzi Malins Knight, M.R.C.S., L.R.C.P. Lond., of Watlington, Norfolk (late of 43, Claremont-square, N.), beloved husband of Winifred Knight and son of Dr. Charles Knight, of Letchworth.

PETTER.—On May 24th, at Netherlaw, Darlington, Walter Petter, M.B., C.M. Edin.

WILSON.—On May 25th, at Watergate, Grantham, Richard Wilson, M.R.C.S., aged 77 years.

*N.B.—A fee of 7*s.* 6*d.* is charged for the insertion of Notices of Births, Marriages, and Deaths.*

THE LATE DR. H. F. E. HARRISON.—Henry Frank Egbert Harrison, who died on May 18th at his residence in Shepherd's Bush, at the age of 78, was for over 40 years medical officer to the Hammersmith Guardians. Educated at Epsom College, he entered St. Mary's Hospital, and qualified L.R.C.P. Lond., M.R.C.S. Eng. in 1869. Dr. Harrison settled in practice in Shepherd's Bush, where, until he became afflicted with the long illness which terminated his active career, he was a well-known figure. His popularity with his wage-earning patients led to the sobriquet of the "friend of the poor," his friendship manifesting itself both in kindly action and in sympathetic intercourse. To his son, Dr. W. L. A. Harrison, and other members of his family our sympathy is extended.

Notes, Comments, and Abstracts.

MENTAL HYGIENE IN CANADA.[1]

BY C. K. CLARKE, M.D., LL.D.,
PROFESSOR OF PSYCHIATRY, UNIVERSITY OF TORONTO; MEDICAL DIRECTOR OF THE CANADIAN NATIONAL COMMITTEE FOR MENTAL HYGIENE.

CANADA being a developing country, where population is sparse and territories enormous, it is almost inevitable that the cost of building and maintaining institutions for the mentally ill should be a heavy burden on a population lacking wealth, as so much had to be undertaken in a short time. The wonder is that anything was accomplished. Again, when it is remembered that the host of immigrants drifting from the old world always contain an undue proportion of defectives and mentally diseased it may be understood that our problem has been by no means a simple one.

Dangers of Indiscriminate Immigration.

Resentment is sometimes shown in Great Britain because we take exception to certain types of immigrants, and deport many individuals who wish to become citizens. But the success of a nation depends almost entirely on the character of its population, and a reading of past history makes it abundantly plain that if we are to preserve the rugged qualities which have characterised our people in the past we shall scan the immigrant coming across the seas very closely. It is a normal defence reaction.

Rudyard Kipling and others say that what Canada must do is to pump in the population. That is true, but at the same time it is necessary to put the suction pipe in waters not polluted by defect, physical degeneracy, and social failure. It must be frankly admitted that our public men are greatly influenced by American ideals, and our politicians are following the footsteps of Uncle Sam closely in the endeavour to rob Europe of its needy millions, with little attempt to sort out the types drifting across the seas. Anthropology is not recognised as a science by these enthusiasts, and the history of the rise and fall of other nations is rarely suggested as a topic worthy of the study of the parliamentarian; but the intelligent study of emigration, not immigration, is the most essential thing in Canada to-day. The United States have long ago discovered that Canada as a whole has been occupied by sturdy Nordic types of efficient and capable people to whose descendants they have extended a warm welcome, with the result that we have suffered enormously by the loss of many of our best. If the immigration had been made up of hardy Nordic agriculturalists such as we had 100 years ago all would have been well. Unfortunately, that is not what happened, and apparently is not likely to happen again. The United States have learned their lesson, but realise that it is too late to profit by it. Their best thinkers feel that the damage has been done, and whatever their idealists injected into their original constitution, they are now convinced that all men are not born equal, and that it is possible to scale down to a new depth rather than rise to greater efficiency. But Canada is now entering upon an era of movement in the other direction; our greatest hope in is the importation of good Nordic types from the United States, and this movement is becoming more and more extensive.

The Problem of Child Immigration.

Possibly child immigration needs more careful supervision than any other, as it so frequently includes physical and mental weaklings. Child immigration would be invaluable if of the right kind under rigid psychiatric inspection, as the children grow up in touch with our ways and of course adapt themselves easily, but if they are of the wrong kind they add enormously to our burdens and troubles. To show that the danger is real, let us scan some accurate statistics regarding some 5800 children referred for examination to a National Mental Hygiene psychiatrist. These were special cases; 1386 were mentally subnormal to such a degree that they were incapable of acquiring an ordinary school education. Of this group only 25 per cent. were Canadians, 33 per cent. were foreign born, and the remainder children of recently arrived immigrants. In one clinic alone, in a short time, 107 girls and 24 boys of the most defective and degenerate types, brought by one child immigration society, have come before my notice. Nearly all the girls were persistently immoral; the majority unmarried mothers, many earning a living on the street; altogether they constituted a serious menace to the health and happiness of the community. It is said, of course, that they had been residents of the country for some time before they went astray; the reply is, that a careful inspection before sending them and a rigid sorting at the port of arrival would have weeded them out. To carry on the latter inspection is most difficult, but the point is that it should not be necessary.

The Position of Psychiatry in Canada.

That research should have fallen by the wayside is not to be wondered at, and that psychiatry as a subject should for many years have occupied only a subordinate position in the medical curricula of the universities was inevitable. The relations between general medicine and psychiatry have been anything but intimate, and as a rule provincial governmental control of institutions resulted in a lowering of standards.

We passed through the various stages which marked the trail of the self-educated psychiatrist all the world over, and only too often adopted the numerous classifications which emanated from the fertile imaginations of those exploiting them. It was not unusual to find an enthusiast who had a new classification for every case he met—indeed history is now repeating itself along these lines—and a panacea for mental disease was discovered a dozen times a year. On the other hand, it must be admitted that medical education ignored psychiatry to a great extent, and provided little or no instruction for the student. To read some of the modern writers on vocational training and industrial pursuits in hospitals for the insane one could almost believe that these things were recent discoveries, and yet in October, 1862, Dr. Jarvis, of Dorchester, Mass., read a remarkable article before the Association of Medical Superintendents of American Institutions for the Insane, entitled Mechanical and other Employments for Patients in the British Lunatic Asylums, in which he showed conclusively that in many of the British asylums occupational therapy (as it is now grandiloquently styled) was developed in a thorough manner. It proved that the experiment was carried on in Britain about 1840, or even earlier, and was continued with increasing confidence for many years.

Psychiatric Experience in Toronto.

After the failure of our psychiatric hospital scheme in Toronto we felt that it would be well to fight for ideals outside of a public service, to scan psychiatry from a new point of view, to lay the foundation for the broader teaching of students, and to educate public opinion along better lines. We established a psychiatric outdoor clinic at the Toronto General Hospital, and interested every social agency in the city—juvenile court, public health, immigration and police departments, social service agencies of all kinds, school physicians and nurses, industrial homes and schools, &c. In a short time we had the whole city working for us, and the clinic has become a powerful factor in the control of juvenile criminality and prostitution, as well as the education of the public to the modern attitude of medicine towards the prevention of evils which have been so manifest and yet difficult to deal with heretofore.

It was felt wise to interest the department of psychology in the University of Toronto in the problem of mental defect. Psychology was ranked as a subdepartment of philosophy, and it did not seem possible to emancipate it from philosophy and physics. Eventually the tide turned and we succeeded in getting not only the coöperation of the psychologists, but their hearty backing, and a great deal of the measuring of intelligence of certain groups of children is being done by them in our clinic. Psychology is coming into its own, and while the wave of excitement, caused by the discovery that psychology has a part to take outside of abstruse speculation, has carried the hyper-enthusiasts too far, yet the well-balanced group, who always save such a situation, realise the true rôle of psychology in the future. No matter how much some psychiatrists may resent the claims of certain psychologists to divine inspiration along special lines of mental investigation, it must be remembered that psychiatry itself has a good many sins and failures to answer for. Even with all the aid given by pathological and clinical investigation, as well as research, can we truthfully assert that psychiatry has kept pace with general medicine as a whole?

The fact that some criticism of psychology and the enthusiasms of psychologists is indulged in does not mean that the importance of psychology is not recognised; on the contrary, it is believed that every psychiatrist should be thoroughly grounded in psychology and psychological methods. Now that psychology has been placed on a footing which makes it rank as a valuable contributor in the study of mental action and behaviour, its claims to recognition cannot be denied, and we should make use of everything it has to offer.

Psychiatry and the War.

We had our outbursts of enthusiasm in certain circles over psycho-analysis, Freudian theories, and sex problems ad nauseam, but it was when war broke out the neo-psychiatrists neuro-psychiatrists, and psychological healers of all kinds found themselves. Shell-shock was their particular fad,

[1] An abstract of the fourth Maudsley Lecture given before the Medico-Psychological Society of Great Britain and Ireland on May 24th, 1923.

and as each performer recited his recoveries, quite oblivious of the truth that the other fellows who employed totally opposite methods of treatment had also 100 per cent. of recoveries, the public stood in amazement at the miracles being performed, and wondered what psychiatry had been doing during all the centuries it had existed. Of course, there were some poseurs, but many of the young men were self-deluded, and, confounding cause with effect, really believed that they could set the whole world straight in a few weeks. Even yet the truth has not yet dawned on a moiety of perfectly honest observers.

Conscription in Canada bore heavily on groups of mental defectives and mildly insane young men who had found their niche in simple farm work or occupations of a routine nature, and the change resulting from the removal to a new environment requiring more mental agility than they possessed resulted in disaster after disaster. But possibly the most valuable fact gleaned from the experience was the discovery that there are many mentally diseased and handicapped persons capable of becoming useful hewers of wood and drawers of water in communities, where, in the past, many were too regularly institutionalised. It means a further linking up of psychology and psychiatry and the using of men trained along psychological lines was applied to vocation and industrial fitness. We have recognised this side in our mental hygiene experiences, and have used with advantage a well-trained official in connexion with the development of this part of the work.

Narrowing Tendency of Institutional Work.

Emancipation from asylum life soon makes it plain that the institution physician is living in a contracted sphere, because after all his medical association is largely with terminal cases; he sees nothing of the evolution of mental disease, particularly in childhood, and is out of touch to a great extent with general medicine. Heads of institutions are necessarily occupied to a great extent with administrative duties, and taking the world as a whole, staffs of the great majority of asylums are so small that research and study cannot be carried on in the best way possible.

The public is really looking for the guidance we have denied it, and when in the past psychiatry has vouchsafed to respond to the request for further light, it has covered its message with a mass of scientific verbiage that no one without the pale could understand. In other words, the aloofness of psychiatrists shut up within the walls of custodial institutions has simply added to the popular misconception of mental disease and given a mysterious tinge to something that should be much better understood by the man on the street. It is only by following such lines as this the amateur dispensers of auto-suggestion and so-called psycho-analysts of similar type can be kept within bounds.

The Mental Hygiene Movement.

When one thinks of the mass of magnificent work done clinically by those who have had time to study the brilliant pathological findings by such investigators as Mott, it is a matter of wonder that so little has been accomplished in the way of actual cure. We must frankly confess that the progress made is not what might have been expected. Experience proves that we have neglected the first principles of preventive medicine, that the road to success lies in the direction of early prevention of mental disease.

It is recognised by the people, when the facts are placed before them, that many methods of the past are simply the outcome of a hopeless and pessimistic attitude that accepts the curse of mental disease as an inevitable and incurable disaster, not far removed from the realm of criminality. Governments not only look to mental hygiene committees for advice, but depend on them to outline and direct many public enterprises. It is true that while the better care of the insane was the motive of the work of Clifford W. Beers, who developed the original Mental Hygiene Committee in the United States, it has been found that this is only a small part of the work to be done. Psychiatrists must no longer be mere custodians of people overtaken by a dire calamity, but aggressive leaders ready to show their mettle in a great cause.

More good has been done by the mental hygiene movement in Canada in five years in the way of improving the care of the insane, the study of defectives, the education of the public opinion to a realisation of the importance of these problems, than was accomplished in half a dozen decades preceding that period. Take, for example, an analysis of 3442 cases under 16, met with in our clinic, and we learn that no less than 8 per cent. could definitely be classed as suffering from mental disease or psychopathic inferiority.

If we are honest we must confess that psychiatry is merely at alpha in its book of knowledge, and that although brilliant work has been done in pathology and clinical investigation an increased recovery rate can scarcely justify us in saying that we have solved or even guessed at the causes of mental disease or indicate just how the law of prevention is to be applied.

Dementia Præcox.

Take the scrap-heap called dementia præcox. Experience during recent years leads one to believe that careful investigation carried on in schools, psychiatric clinics, and juvenile courts, will demonstrate the fact that the victims of the psychosis may nearly always be detected at any early age. It is most important to learn how much prevention can do to steer the patients clear of the tragedy ordinarily awaiting them. At all events it is apparent that biochemical problems, studies in metabolism, in fact a whole series of laboratory investigations, along the most advanced lines are required.

Some of the younger group of enthusiasts who scoff at the influence of heredity, and talk learnedly about environment as the cause of the majority of misfits, pooh-pooh the occurrence of dementia præcox at early age, and assert that nearly all cases of children who show the symptoms of this disease clear up eventually. I wish that such were the truth, but unfortunately I have seen during their developmental stage too many cases which eventually decline into complete dementia.

Of course, it will be pointed out that after all eugenics will do more than anything else to solve the problem, but no matter how wonderful eugenics appear in theory, as long as human nature remains as it is the application of eugenics as taught by some ultra-modern teachers will prove not only difficult but nearly impossible. Extreme methods will invariably produce violent reactions, and it is a simple matter to acquire the label "crank" if enthusiasm interferes with the sentiment tradition has woven about marriage. It is difficult to steer between the Scylla of tradition and the Charybdis of eugenistic enthusiasm. The very fact that so little satisfactory work has been done on the pyschoses of children is in itself evidence that the matter has escaped the attention of most psychiatrists. The physicians in hospitals for the insane are often without practical experience in the matter, and those who are innocent of psychiatric training overlook what is obvious to the skilled observer. Careful investigation shows that in very early life the evolution of many cases of mental disease may be studied—it is to be hoped with advantage to the patient.

The Teaching of Psychology and Psychiatry at the University of Toronto.

It appears that the time has come to revise our methods of educating psychiatrists. So strongly do we feel on the matter that in the University of Toronto we have developed an optional course covering five years in psychology and psychiatry. After much thought we have outlined a course of options and already a group has advanced to the fourth year of the six years' course. They are receiving 60 hours a year of special training in psychology and psychiatry during five years. Out of 80 who applied for the option some 35 of the most brilliant were selected, and this group has been carefully weeded. During their second year in medicine they received a training in elementary psychology. In their third year a course of 60 hours in more advanced as well as experimental psychology is being given, and the students advised to take additional training in chemistry and psychics. The fourth year has had 60 hours devoted to abnormal psychology, the exposition of the modern attitude of psychology towards mental defect and mental disease, taking in, of course, the theories of the Freudians, the psychoanalysts, &c. Practical work in the way of applying mental tests to normal and abnormal children has been given, with the idea of making the student familiar with the true value of mental tests, but showing also how they often fail to reveal the whole story. The fifth and sixth years of the course will be largely clinical, the work being carried on in the psychopathic hospital and psychiatric clinic at the Toronto General Hospital. These institutions are certain to offer no end of useful clinical material, which under our law is always available. Such a course will, we hope, equip a band of young psychiatrists with a training of the most useful kind, ready not only to undertake institutional work if necessary, but to carry on practice among mentally diseased persons who do not require treatment in institutions.

We feel that research must not be limited to institutions, but must be put on the broadest basis possible, and include persistent investigation of mental development and mental disease in child life. Such a plan as that adopted in the Toronto schools must eventually become a common one, and means intelligent coöperation between school boards and public health departments; the public health department assumes full authority for the inspection of children and lays out the programme to be followed by the educational authorities in dealing with abnormal types. A psychiatric department exists, and is proving a powerful influence for good; when its industrial and farm schools are in operation further advances will take place. Psychology only too often arrogates to itself the right to deal with the abnormal child, feeling certain that it is able to prescribe the proper treatment. Much as we are indebted to psychology for the

splendid work done among children of low intelligence, there has been failure in the understanding of school pupils suffering from mental disease. To admit otherwise would be to recognise charlatanry as justifiable and advisable.

Intelligence Tests and Precocity.

Our experience with different intelligence tests has now been so great that we are in a position to estimate their value as well as appreciate their inadequacy. Unfortunately, their apparent simplicity and ease of application have resulted in the stimulation of the ambition of hosts of amateurs, especially teachers, whose work is harmful, being limited by lack of vision and knowledge, or a proper conception of the significance of the tests. They cannot understand the danger of accepting a standard of intelligence telling merely a portion of the story, and ignoring the part of it necessary to complete a picture of the child's mind and personality. An outburst in another direction is also under active development, and in psychological and pedagogical circles the discussion of the "supernormal" child waxes warm. The term supernormal is unfortunate and unscientific, as it gives a false impression, and by too many psychologists is loosely applied to a group including well-developed children above the average in intelligence and physique, as well as a group of physical and mental weaklings measuring high by the Binet-Simon scale. In them precocity is the outstanding feature, and their doom under ordinary circumstances easily foretold. What will happen to them under the forcing process so frequently recommended is well known to asylum physicians, who constantly see these wrecks stranded early in university and scholastic careers. Possibly there is little chance of saving them under any circumstances, but there is no argument in favour of hurrying the calamity.

Education of the Public.

The most important part of the work of the Canadian National Committee for Mental Hygiene is to educate people to a knowledge of the importance of having well-educated psychiatrists abroad in the community with the idea of helping to keep the importance of prevention ever in mind, and to scan school populations with a skilled eye with the hope of forestalling a thousand and one tragedies such as one sees to-day.

The psychiatrist of to-morrow must be able to grapple with problems concerning individuals who are social misfits, to analyse behaviour problems of all kinds, and to give advice regarding the mental hygiene of the whole community. It is obvious that outdoor departments or dispensaries should exist in connexion with many institutions near urban centres, although this is more easily accomplished in general hospitals or psychopathic clinics, where facilities for thorough examination exist and laboratory findings are obtainable at a minimum cost. Possibly there is more red tape here in connexion with institutional matters than is the case beyond the sea, but the persistent attempt to break down the barriers imposed by tradition and ignorance is bearing fruit with us. The clinics have robbed the institutions of much of the stigma formerly attached to them. Voluntary admissions are growing in number; so much might be said along these lines that one hesitates to open the subject. Then, again, the importance of prevention must never be forgotten. To do all this it is evident that psychiatrists must be emancipated from a great part of the administrative work which they are frequently ill-trained to do efficiently. They must be given large staffs of specially trained social workers and nurses to carry on follow-up work as well as investigations of home conditions.

The reaction against the purely psychological point of view in school adjustments of mentally handicapped pupils has already shown itself in certain centres, and if the greatest good is to follow the survey of school populations, psychiatrists must equip themselves to carry out this work in the best way possible, for after all it is distinctly a medical problem. How can a psychologist, for example, diagnose and prescribe for a developing case of a manic-depressive or a dementia præcox psychosis? More than ever before we must now take stock of the assets and liabilities of psychiatry. The public must be shown its just reasons for existence, its readiness to adjust itself to the new order of things, and a constructive ability to do something more than merely provide custodial care for those who have fallen by the wayside.

THE PROPERTIES OF COD-LIVER OIL.

Dr. E. Poulsson, professor of pharmacology at the University of Christiania, has prepared a pamphlet, issued by the proprietors of Dr. De Jongh's cod-liver oil (Ansar Harford and Co, Ltd., 182, Gray's Inn-road, London, W.C. 1), in which the medicinal properties of cod-liver oil and the reasons for its employment in disease are set out. The nutritional value of cod-liver oil is well known, and in this pamphlet of some 16 pages its accessory food factor content is discussed in a clear and succinct manner.

HOSPITAL TREATMENT FOR MIDDLE-CLASS PATIENTS:

A SUGGESTED SCHEME OF INSURANCE.

IN an address delivered at the Annual Conference of the British Hospitals Association, held at Sheffield on May 31st, Sir Napier Burnett confined his observations to the income side of hospital finance, and outlined a suggested basis of insurance for hospital patients within certain income limits, £250 to £600 or so (class "B" patients). We give the scheme in abstract substantially in his own words.

The Disabilities to be Met.

The serious financial position of many patients belonging to this class, when overtaken by accident or sickness, requires no special pleading; in many cases such patients are ineligible for admission to a general hospital because of rules laid down in the original charter. During the past 20 years many advances have been made in scientific medicine and surgery, and to keep abreast of these developments elaborate and expensive apparatus has been devised in the equipment of the many new departments that have had to be established to meet the needs of specialisation. Such apparatus leads to a greater precision in the diagnosis and treatment of disease.

The benefits of these scientific attainments are now available for class "C" of patient, but those of moderate means, debarred from the private hospital or nursing home because of the cost, are yet unable to participate in the benefits of modern hospital scientific resources. At present class "B" patients whose annual income exceeds £250 may receive hospital treatment in one of the following ways, namely:—

1. A certain number now find their way into the hospital wards, either as members of a contributory scheme which has no fixed income limit, or they are admitted as the result of some emergency illness, and while in hospital they may or may not be assessed towards the cost of maintenance by the hospital almoner.

2. A comparatively small number of the larger hospitals has recently followed the lead given by many of the cottage hospitals in setting aside a small number of beds for paying patients. Such beds usually show a high percentage of occupation, indicating that they are meeting a real need. Patients admitted to those reserved beds are charged from 2–5 guineas per week towards the cost of maintenance, and in some hospitals the patient also pays for treatment, making his own financial arrangements with a member of the hospital medical staff. General hospitals in this country have not been designed, as in America, to provide separate accommodation for patients paying varying rates either towards maintenance or treatment, with the result that patients in adjoining beds occasionally find themselves paying different rates and consequently are prone to question the equity of the arrangements; whereas in other hospitals the medical staff are not expected to charge the patients in the paying wards for their services. Such an arrangement is likely to lead the medical officer to the opinion that his services are being exploited by the hospital if he is asked to treat patients of a financial status considerably above those with respect to whom his services were contracted for in a voluntary capacity.

3. Again, a class "B" patient may be admitted to a general hospital as a member of some insurance scheme, such as the Sussex Provident Scheme, which undertakes to pay to the hospital the total cost of maintenance plus an agreed percentage to the medical staff for every member in the scheme treated by the hospital. But the maximum income limit of the Sussex scheme is fixed at £350 for husband, wife, and family (up to 16 years of age), and the annual premium for the provision of hospital treatment when required, plus dental and ambulance service, &c., is £2.

The Scheme Set Out.

The main objection to the various arrangements whereby the middle-class patient can receive hospital treatment (with the exception of the Provident Scheme referred to) is that the heavy expenditure for both maintenance and treatment falls on the patient at the very time when he is least able to afford it—namely, when his income is cut off. The ideal scheme will doubtless be reached some day, when there shall be a hospital bed available for any member of the community who requires hospital treatment. In the meantime, the following scheme is submitted as a contribution towards the solution of a difficult and urgent problem.

Provided that the actuarial foundations are sound, a voluntary insurance scheme possesses many advantages. I suggest that, by a system of insurance, hospital provision might be arranged for the class "B" with an income, say, between the limits of £250 and £600 or £700 per annum, the premium for such insurance to be at the rate of £2 per

annum, with the option of paying quarterly or half-yearly. In illustration, let me give the following figures.

Say that in one community there are 5000 people between the income limits above mentioned, who voluntarily join an insurance scheme, in order to obtain hospital treatment when necessary, and when accommodation is available, on the basis of £2 per annum, the hospital would collect £10,000, which would be kept as a pool apart from the other hospital funds. The first call on the pool would be payment to the hospital of the total cost of maintenance of all insured patients treated during the year. The sickness incidence amongst class "C" is a known quantity—namely, 2 per cent. require hospital treatment. The sickness incidence in class "B" is considerably less, and also there is not the same liability to accident, but in order to provide a margin of safety, and also to include husband and wife, let us double the rate in "C" class and allow 4 per cent. of sickness incidence. Out of the 5000 people insured, some 200 might require hospital treatment during the year. Further, if we calculate the average total cost to the hospital of each in-patient as £10, roughly 3 guineas per week, and an average length of stay of three weeks, the hospital would receive £2000 in full payment of the total cost of the insured patients treated. This payment would leave a balance of £8000 in the pool.

The medical staff could not reasonably be expected to render voluntary service; therefore I suggest that the second charge on the pool should be payment to the medical staff, and in order to remove from the wards all possibility of varying tariff charges, an agreed percentage of the pool might be paid into a medical staff fund, to be apportioned by the medical men themselves to their individual members on the basis of work done. Again, to allow of a margin of safety the maximum figure of 50 per cent. may be withdrawn from the pool towards such a fund—that is, a sum of £4000. The further balance of £4000 remaining in the pool after meeting the total charges incurred by the hospital, and the payment to the medical staff, represents the real insurance quota, or so-called profit of the scheme, and this sum should be utilised in the provision of increased accommodation and facilities for the treatment of class "B" patients.

Critical Examination of the Scheme.

Two criticisms of such a scheme readily suggest themselves—namely: (1) The ability of hospitals to supply the requisite accommodation implied by the scheme without in any way interfering with the provision for class "C"; and (2) the machinery for administering the scheme. In regard to (1), a certain number of class "B" make use of the hospital beds as it is. Again, dealing with the figure mentioned in the illustration—namely, 200 patients per annum, as the sickness incidence of the 5000 insured people, that number would roughly represent 13 beds, with an average overturn of 15 patients per bed per annum; further additional accommodation could be provided from the surplus funds as the scheme develops. With regard to the nature of the accommodation, in a number of hospitals paying patients are satisfied to be treated in small wards set aside for the purpose and screened off into cubicles. With regard to (2) the scheme might be carried out by some recognised insurance company already possessing the necessary collecting machinery, but this would deprive the hospital of the outstanding benefit under the scheme. The requisite machinery might quite well be provided by the existing contributory scheme organisation.

The three outstanding advantages that such a scheme, as roughly outlined, would possess are:—

(1) That the elaborate equipment and facilities for the diagnosis and treatment of disease now possessed by the modern voluntary hospital and obtainable to the same extent nowhere else, would be available for an additional and very deserving section of the community.

(2) A fresh avenue of finance would be opened up for voluntary hospitals.

(3) Payment would be provided for the hospital medical staff.

RUSSIAN DOCTORS IN NEED.

To the Editor of THE LANCET.

SIR,—The Russian doctors and medical staff in the famine-stricken regions are in a very difficult situation as they are left without resources, and are deprived of means for bringing help to the thousands of sufferers. Many hospitals and dispensaries in the villages, organised by the efforts of the Russian Red Cross and the Commissariat of Public Health, are compelled to stop their activities because of the lack of funds, medicaments, and surgical instruments. The regions where the population was exhausted by famine are at present centres of endemic and epidemic diseases, dangerous not only to Russia, but also to the rest of the world. Infectious diseases, including consumption, typhus, typhoid fever, and malaria are raging, while severe diseases of the digestion, in consequence of the famine, are widely spread. It is urgently necessary that help should be rendered from abroad and that an energetic campaign should be continued against the consequences of famine. The Russian medical services alone are unable to master the situation. We appeal to the feeling of solidarity of the medical and scientific men of Great Britain and America, and hope that they will answer generously to the appeal for help of their Russian colleagues.

Donations in money or in kind may be sent to the Secretary of the Medical Aid Committee for Sufferers from the Russian Famine, 68, Lincoln's Inn-fields, London, W.C. 2.

We are, Sir, yours faithfully,

V. N. POLOVTSEV, Chairman.
May 24th, 1923. L. HADEN GUEST, Vice-Chairman.

PSORIASIS OF THE NAILS.

To the Editor of THE LANCET.

SIR,—I wonder if any of your readers could give me any useful information about the treatment of chronic psoriasis of the nails. Chrysarobin, besides being unpleasant, has proved of little benefit after many months' trial.

I am, Sir, yours faithfully,

May 22nd, 1923. "BAULKED."

AMBULANCE COMPETITION TESTS.

Messrs. John Bale, Sons and Danielsson, Ltd., have issued at the price of 3*d.* each a series of folders for the use of ambulance students preparing for competitions. They contain up-to-date tests with detailed marking sheets and useful hints with regard to training—what should be done and what should not be done. The tests are well worked out, and should afford valuable help for those undergoing their training in first aid.

Parliamentary Intelligence.

HOUSE OF LORDS.

TUESDAY, MAY 29TH.

Smoke Abatement.

Viscount ASTOR asked the Parliamentary Secretary to the Ministry of Health when it was proposed to introduce legislation with regard to smoke abatement. If the Bill was not introduced at an early date it would be impossible to pass it this session.

The Earl of ONSLOW said that the Government intended to introduce a Bill in their lordship's House to deal with this subject. The measure was in process of drafting, and there would be no great delay in its introduction.

HOUSE OF COMMONS.

MONDAY, MAY 28TH.

Coroners' Legislation.

Sir BERTRAM FALLE asked the Secretary of State for the Home Department when he proposed to bring in the new Bill dealing with coroners.—Mr. G. LOCKER-LAMPSON (Under-Secretary to the Home Office) replied: A Bill is in course of preparation, but my right hon. friend is not in a position to say when it will be possible to introduce it.

TUESDAY, MAY 29TH.

Sanitation in Rural Districts.

Captain REGINALD TERRELL asked the Minister of Health if he was aware that in many country districts there was a complete absence of effective sanitation, which on medical assertion might be a serious danger to public health; and whether, seeing that local authorities were inclined to regard the necessary outlay as an undue burden on the rates, he would provide assistance by way of an unemployment grant, thereby accomplishing a double benefit.—Lord E. PERCY replied: My right hon. friend is aware that the sanitary conditions are not satisfactory in some country districts, and that the difficulties in the way of improving matters are mainly financial. In cases where the degree of local unemployment is sufficient to warrant an unemployment grant any schemes submitted by local authorities will receive consideration.

Registration of Deaths and Burials.

Dr. SALTER introduced a Bill to amend the law relating to the registration of deaths and burials, which was read a first time.